SCOPE OF WORK

Restoration of Windows and Doors

Boxwood Hall Historic Site
Elizabeth, Union County, NJ

Project No. P1364-00

STATE OF NEW JERSEY

Honorable Philip D. Murphy, Governor
Honorable Tahesha L. Way, Lt. Governor

DEPARTMENT OF THE TREASURY

Elizabeth Maher Muoio, Treasurer

DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION

Thomas A. Edenbaum, Director

Date: September 19, 2025

Document Format Revision 8-1-2022

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I. OBJECTIVE

The objective of this project is to restore and rehabilitate windows and doors at Boxwood Hall Historic site.

II. CONSULTANT QUALIFICATIONS

A. CONSULTANT & SUB-CONSULTANT PRE-QUALIFICATIONS

The Consultant shall be a firm pre-qualified with the Division of Property Management & Construction (DPMC) in the following discipline(s):

- **P034 Historical Preservation/Restoration**

The Consultant shall also have in-house capabilities or Sub-Consultants pre-qualified with DPMC in:

- **P037 Asbestos Design**
- **P038 Asbestos Safety Control Monitoring**
- **P065 Lead Paint Evaluation/Inspection**

As well as, **any and all** other Architectural, Engineering and Specialty Disciplines necessary to complete the project as described in this Scope of Work (SOW).

III. PROJECT BUDGET

A. CONSTRUCTION COST ESTIMATE (CCE)

The initial Construction Cost Estimate (CCE) for this project is $200,000.

The Consultant shall review this Scope of Work and provide a narrative evaluation and analysis of the accuracy of the proposed project CCE in its technical proposal based on its professional experience and opinion.

B. CURRENT WORKING ESTIMATE (CWE)

The Current Working Estimate (CWE) for this project is $300,500.

The CWE includes the construction cost estimate and all consulting, permitting and administrative fees.

The CWE is the client agency's financial budget based on this project Scope of Work and shall not be exceeded during the design and construction phases of the project unless DPMC approves the change in Scope of Work through a Contract amendment.

C. CONSULTANT'S FEES

The construction cost estimate for this project ***shall not*** be used as a basis for the Consultant's design and construction administration fees. The Consultant's fees shall be based on the information contained in this Scope of Work document and the observations made and/or the additional information received during the pre-proposal meeting.

IV. PROJECT SCHEDULE

A. SCOPE OF WORK DESIGN & CONSTRUCTION SCHEDULE

The following schedule identifies the estimated design and construction phases for this project and the estimated durations. The Consultant's proposed design and construction schedule shall be in Gantt chart format and calendar day durations with start and finish dates for each task.

PROJECT PHASE	**ESTIMATED DURATION (Calendar Days)**
1. Site Access Approvals & Schedule Design Kick-off Meeting	**14**
2. Schematic Design Phase	**21**
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14
3. Design Development Phase	**28**
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14
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7. Permit Application Phase	**7**

- *Issue Plan Release*

8. Bid Phase	**42**
9. Award Phase	**28**
10. Construction Phase	**90**
11. Project Close Out Phase	**30**

Note: The Final Design Phase is considered complete upon the release of Construction Documents by either the DPMC Code Group or the Department of Community Affairs (DCA).

B. CONSULTANT'S PROPOSED DESIGN & CONSTRUCTION SCHEDULE

The Consultant shall submit a project design and construction schedule with its technical proposal that is similar in format and detail to the schedule depicted in **Exhibit 'A.'** The schedule developed by the Consultant shall reflect its recommended project phases, phase activities, and activity durations.

A written narrative shall also be included with the technical proposal explaining the schedule submitted and the reasons why and how it can be completed in the time frame proposed by the Consultant.

This schedule and narrative will be reviewed by the Consultant Selection Committee as part of the evaluation process and will be assigned a score commensurate with clarity and comprehensiveness of the submission.

V. PROJECT SITE LOCATION & TEAM MEMBERS

A. PROJECT SITE ADDRESS

The location of the project site is:

Boxwood Hall Historic Site
1073 East Jersey Street
Elizabeth, NJ 07201

See **Exhibit 'B'** for the project site location map.

B. PROJECT TEAM MEMBER DIRECTORY

The following are the names, addresses, and phone numbers of the Project Team members.

1. Department of Environmental Protection Representative

Name: Jason Freeborn, Project Manager
Address: Department of Environmental Protection
275 Freehold-Englishtown Rd
Freehold, NJ 07726
Phone No: (609)789-8125
E-Mail: jason.freeborn@dep.nj.gov

VI. PROJECT DEFINITION

A. BACKGROUND

Boxwood Hall was built around 1750 as an 18-room manor house. Home to Elias Boudinot, President of the Continental Congress that ratified the Treaty of Paris, and Jonathan Dayton, youngest signer of the United States Constitution. Visitors have included General George Washington, Alexander Hamilton, the Marquis de Lafayette and Aaron Burr. Boxwood Hall was also home to Samuel and Elizabeth Wooodruff, Hannah Boudinot, Susan Dayton and their staffs. It once included farmland and various outbuildings, now lost to modern day Elizabeth.

The house wings and outbuildings were removed in the mid 19th century, but 1 ½ stories were then added to the central block and a service wing constructed at the rear. In the 1940's the hall was restored to the original roof line and the service wing was demolished. The building is now operated as a museum managed by the New Jersey Department of Environmental Protection (DEP).

B. FUNCTIONAL DESCRIPTION OF THE BUILDING

Boxwood Hall currently stands as a 2 ½ Story manor with a basement, stone foundations, wood shake siding, and wood shingle roofing. Various historic displays on the first and second floor show the rich history of the site including some furnishings. There are entrance doors located in the front and the rear of the building. There are 27 windows on the house. Of these, 9 basement windows have already been addressed in a previous project. The remaining 18 windows are to be restored as part of this project, along with the entrance doors.

In 2021, DEP procured the services of Ronald A. Sebring Associates, LLC (RASA) to assess the windows and structure at Boxwood Hall. **Exhibit 'C'** shows the report entitled, "Window Conditions and Structural Assessment at Boxwood Hall Residence."

Hazardous materials were found, as expected, by RASA. Details are in the report. When construction and repairs begin, the Contractor should be required to submit a hazardous material removal safety plan, including site specific information and disposal methods and locations. Allowances are provided for further testing, abatement and construction administration as necessary.

VII. CONSULTANT DESIGN RESPONSIBILITIES

A. DESIGN REQUIREMENTS

1. General

The Consultant shall provide design, specification, construction administration, permitting and bid/award services for window and door restoration at Boxwood Hall Historic. The Consultant shall comply with the DPMC "Procedures for Architects and Engineers Manual," and with all applicable laws, rules, and regulation requirements. The design will include repair and rehabilitation of 18 window units and 2 entrance door units. The A/E manual can be found at the following link:
https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf

The Consultant shall meet and coordinate with the NJ Department of Environmental Protection, State Parks, Forests, & Historic Sites, Office of Resource Development Staff, Liberty State Park/Boxwood Hall Superintendent and Staff to outline all requirements necessary for the design. The Consultant shall document interviews with DEP and Park Staff to identify their requirements and needs. All specific components and essential items of this project scope, which are required by the Client Agency at those meetings, shall be incorporated in the design.

2. State Historic Preservation Office Approval

The Consultant shall complete an "Application for Project Authorization Under the New Jersey Register of Historic Places Act" and submit it to the State Historic Preservation Office for review and approval prior to securing the required UCC permits.

The "Application for Project Authorization under the New Jersey Register of Historic Places Act" can be found at: http://www.nj.gov/dep/hpo/2protection/sr_revapp_min.pdf.

3. Security and Night Seals

The design shall include specifications for site security and night/weather seals. The building shall be secured and protected daily.

4. Windows

The consultant shall develop detailed plans for the restoration and rehabilitation of the indicated windows on boxwood hall. The finished units shall be rehabilitated to a "like new" condition.

5. Doors

The design shall include detailed plans for the rehabilitation and restoration of the entrance doors on Boxwood Hall. The units shall be rehabilitated to a "like new" condition.

B. HAZARDOUS BUILDING MATERIALS

Consultant shall survey the building and related components and, if deemed necessary, collect samples of materials that will be impacted by the construction/demolition activities and analyze them for the presence of hazardous materials including:

1. Asbestos in accordance with N.J.A.C. 5:23-8, Asbestos Hazard Abatement Sub-code.

2. Lead in accordance with N.J.A.C. 5:17, Lead Hazard Evaluation and Abatement Code.

3. PCB's in accordance with 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions. Consultant shall engage a firm certified in the testing and analysis of materials containing PCB's.

Consultant shall document their procedure, process and findings and prepare a "Hazardous Materials Survey Report" identifying building components impacted by construction activities requiring hazardous materials abatement. Consultant shall provide three copies of the "Hazardous Materials Survey Report" to the Project Manager.

Consultant shall estimate the cost of hazardous materials sample collection, testing, analysis and preparation of the Hazardous Materials Survey Report and include that amount in their fee proposal line item entitled **"Hazardous Materials Testing and Report Allowance,"** refer to paragraph **X.B**.

Based on the Hazardous Materials Survey Report, Consultant shall provide construction documents for abatement of the hazardous materials impacted by the work in accordance with the applicable code, sub-code and Federal regulations.

Consultant shall estimate the cost to prepare construction documents for hazardous materials abatement and include that amount in their fee proposal line item entitled **"Hazardous Materials Abatement Design Allowance,"** refer to paragraph **X.C**.

Consultant shall estimate the cost to provide "Construction Monitoring and Administration Services" for hazardous materials abatement activities and include that amount in their fee proposal line item entitled **"Hazardous Materials Construction Administration Allowance,"** refer to paragraph **X.D**.

There shall be no "mark-up" of sub-consultant or subcontractor fees if sub-consultants or subcontractors are engaged to perform any of the work defined in paragraph **VII.B** "**Hazardous Building Materials."** All costs associated with managing, coordinating, observing and administrating sub-consultants and subcontractors performing hazardous materials sampling, testing, analysis, report preparation, hazardous materials construction administration services shall be included in the consultant's lump sum fee proposal.

C. DESIGN MEETINGS & PRESENTATIONS

1. Design Meetings

Conduct the appropriate number of review meetings with the Project Team members during each design phase of the project so they may determine if the project meets their requirements, question any aspect of the contract deliverables, and make changes where appropriate. The Consultant shall describe the philosophy and process used in the development of the design criteria and the various alternatives considered to meet the project objectives. Selected studies, sketches, cost estimates, schedules, and other relevant information shall be presented to support the design solutions proposed. Special considerations shall also be addressed such as: contractor site access limitations, utility shutdowns and switchover coordination, phased construction and schedule requirements, security restrictions, available swing space, material and equipment delivery dates, etc.

It shall also be the responsibility of the Consultant to arrange and require all critical Sub-Consultants to be in attendance at the design review meetings.

Record the minutes of each design meeting and distribute within three (3) calendar days to all attendees and those persons specified to be on the distribution list by the Project Manager.

2. Design Presentations

The minimum number of design presentations required for each phase of this project is identified below for reference:

Schematic Phase: One (1) oral presentation at phase completion.

Design Development Phase: One (1) oral presentation at phase completion.

Final Design Phase: One (1) oral presentation at phase completion.

D. EXISTING DOCUMENTATION

Copies of the following documents will be provided to each Consulting firm at the pre-proposal meeting to assist in the bidding process.

- DBC Project P430: Existing Conditions – Elevations, 2/21/1984, Department of Treasury

Review these documents and any additional information that may be provided at a later date such as reports, studies, surveys, equipment manuals, as-built drawings, etc. The State does not attest to the accuracy of the information provided and accepts no responsibility for the consequences of errors by the use of any information and material contained in the documentation provided. It shall be the responsibility of the Consultant to verify the contents and assume full responsibility for any determination or conclusion drawn from the material used. If the information provided is insufficient, the Consultant shall take the appropriate actions necessary to obtain the additional information required.

All original documentation shall be returned to the provider at the completion of the project.

VIII. PERMITS & APPROVALS

A. NJ UNIFORM CONSTRUCTION CODE PLAN REVIEW AND PERMIT

The project construction documents must comply with the latest adopted edition of the NJ Uniform Construction Code (NJUCC).

The latest NJUCC Adopted Codes and Standards can be found at:

https://www.nj.gov/dca/codes/codreg/ucc.shtml

1. NJUCC Plan Review

Consultant shall estimate the cost of the NJUCC Plan Review by DCA and include that amount in their fee proposal line item entitled **"Plan Review and Permit Fee Allowance,"** refer to paragraph X.A.

Upon approval of the Final Design Phase Submission by DPMC, the Consultant shall submit the construction documents to the DCA, Bureau of Construction Project Review to secure a complete plan release.

As of July 25, 2022, the DCA is only accepting digital signatures and seals issued from a third party certificate authority.

Procedures for submission to the DCA Plan Review Unit can be found at:

https://www.nj.gov/dca/codes/forms/pdf_bcpr/pr_app_guide.pdf

Consultant shall complete the "Project Review Application" and include the following on Block 5 as the "Owner's Designated Agent Name":

Trevor M. Dittmar, DPMC
PO Box 235
Trenton, NJ 08625-0235
Trevor.Dittmar@treas.nj.gov 609-984-5529

The Consultant shall complete the NJUCC "Plan Review Fee Schedule", determine the fee due and pay the NJUCC Plan Review fees, refer to Paragraph X.A.

The NJUCC "Plan Review Fee Schedule" can be found at:

https://www.nj.gov/dca/codes/forms/pdf_bcpr/pr_fees.pdf

2. NJUCC Permit

Upon receipt of a complete plan release from the DCA Bureau of Construction Project Review, the Consultant shall complete the NJUCC permit application and all applicable technical sub-code sections. The "Agent Section" of the application and certification section of the building sub-code section shall be signed. These documents, with **six (6) sets of DCA approved, signed and sealed construction documents** shall be forwarded to the DPMC Project Manager.

The Consultant may obtain copies of all NJUCC permit applications at the following website:

https://www.nj.gov/dca/codes/resources/constructionpermitforms.shtml

All other required project permits shall be obtained and paid for by the Consultant in accordance with the procedures described in Paragraph VIII.B.

3. Prior Approval Certification Letters

The issuance of a construction permit for this project may be contingent upon acquiring various "prior approvals" as defined by N.J.A.C. 5:23-1.4. It is the Consultant's responsibility to determine which prior approvals, if any, are required. The Consultant shall submit a general certification letter to the DPMC Plan & Code Review Unit Manager during the Permit Phase of this project that certifies all required prior approvals have been obtained.

In addition to the general certification letter discussed above, the following specific prior approval certification letters, where applicable, shall be submitted by the Consultant to the DPMC Plan & Code Review Unit Manager: Soil Erosion & Sediment Control; Water & Sewer Treatment Works Approval; Coastal Areas Facilities Review; Compliance of Underground Storage Tank Systems with N.J.A.C. 7:14B; Pinelands Commission; Highlands Council; Well Construction and Maintenance; Sealing of Abandoned Wells with N.J.A.C. 7:9D; Certification that all utilities have been disconnected from structures to be demolished; Board of Health Approval for Potable Water Wells; Health Department Approval for Septic Systems; and Notification to Adjoining Property Owners with N.J.A.C. 5:23-2.17(c). It shall be noted that in accordance with N.J.A.C. 5:23-2.15(a)5, a permit cannot be issued until the letter(s) of certification is received.

4. Multi-building or Multi-site Permits

A project that involves many buildings and/or sites requires that a separate permit shall be issued for each building or site. The Consultant must determine the construction cost estimate for *each* building and/or site location and submit that amount where indicated on the permit application.

5. Special Inspections

In accordance with the requirements of the New Jersey Uniform Construction Code N.J.A.C. 5:23-2.20(b), Bulletin 03-5 and Chapter 17 of the International Building Code, the Consultant shall be responsible for the coordination of all special inspections during the construction phase of the project.

Bulletin 03-5 can be found at:

https://www.nj.gov/dca/codes/publications/pdf_bulletins/b_03_5.pdf

a. Definition

Special inspections are defined as an independent verification by a certified special inspector for **Class I buildings and smoke control systems in any class building**. The special inspector is to be independent from the contractor and responsible to the Consultant so that there is no possible conflict of interest.

Special inspectors shall be certified in accordance with the requirements in the NJUCC.

b. Responsibilities

The Consultant shall submit with the permit application, a list of special inspections and the agencies or special inspectors that will be responsible to carry out the inspections required for the project. The list shall be a separate document, on letter head, signed and sealed.

B. OTHER REGULATORY AGENCY PERMITS, CERTIFICATES AND APPROVALS

The Consultant shall identify and obtain all other State Regulatory Agency permits, certificates, and approvals that will govern and affect the work described in this Scope of Work. An itemized list of these permits, certificates, and approvals shall be included with the Consultant's Technical Proposal and the total amount of the application fees should be entered in the Fee Proposal line item entitled, **"Plan Review and Permit Fee Allowance."**

The Consultant may refer to the DPMC "Procedures for Architects and Engineers Manual," Paragraph "**9. REGULATORY AGENCY APPROVALS"** which presents a compendium of State permits, certificates, and approvals that may be required for this project.

The Consultant shall determine the appropriate phase of the project to submit the permit application(s) in order to meet the approved project milestone dates.

Where reference to an established industry standard is made, it shall be understood to mean the most recent edition of the standard unless otherwise noted. If an industry standard is found to be revoked, or should the standard have undergone substantial change or revision from the time that the Scope of Work was developed, the Consultant shall comply with the most recent edition of the standard.

IX. BIDDING AND CONTRACT AWARD RESPONSIBILITIES

The Bidding and Contract Award Phase commences with receipt of the required permits, UCC plan release and verification that funding is in place for construction. The Consultant shall refer to the DPMC "Procedures for Architects and Engineers Manual", Paragraph "17. BIDDING AND CONTRACT AWARD" for all requirements for this phase available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf.

X. CONSTRUCTION ADMINISTRATION RESPONSIBILITIES

The A/E and their sub-consultants shall, unless otherwise specified in the project specific Scope of Work, provide site administration during the construction of the project. The services required of such site administration shall include, but shall not be limited to, attend and chair the pre-construction meeting, conduct weekly field observations, attend and chair regularly scheduled bi-weekly job meetings, review/approve shop drawings, submittals, and respond to RFI's.

The Consultant shall refer to the DPMC "Procedures for Architects and Engineers Manual", Paragraph "18. CONSTRUCTION PHASE" for all construction administration requirements available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf.

XI. PROJECT CLOSE-OUT PHASE

The DPMC Project Manager has the full responsibility for the planning, scheduling, and execution of project close-out activities. The A/E is responsible to cooperate with the DPMC Project Manager in the planning, scheduling, and execution of project close-out activities. The Consultant shall refer to the DPMC "Procedures for Architects and Engineers Manual", Paragraph "19. PROJECT CLOSE-OUT PHASE" for all requirements available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf.

XII. ENERGY REBATE AND INCENTIVE PROGRAMS

The Consultant shall review any and all programs on the State and Federal level to determine if any proposed upgrades to the mechanical and/or electrical equipment and systems for this project qualify for approved rebates and incentives.

The Consultant shall review the programs available on the "New Jersey's Clean Energy Program" website at: http://www.njcleanenergy.com as well as federal websites and New Jersey electric and gas utility websites to determine if and how they can be applied to this project.

The Consultant shall identify all applicable rebates and incentives in their technical proposal and throughout the design phase.

The Consultant shall be responsible to complete the appropriate registration forms and applications, provide any applicable worksheets, manufacturer's specification sheets, calculations, attend meetings, and participate in all activities with designated representatives of

the programs and utility companies to obtain the entitled financial incentives and rebates for this project.

All costs associated with this work shall be estimated by the Consultant and the amount included in the base bid of its fee proposal.

XIII. ALLOWANCES

A. PLAN REVIEW AND PERMIT FEE ALLOWANCE

The Consultant shall obtain and pay for all of the project permits in accordance with the guidelines identified below.

1. Permits

The Consultant shall determine the various permits, certificates, and approvals required to complete this project.

2. Permit Costs

The Consultant shall estimate the application fee costs for all of the required project permits, certificates, and approvals (excluding the NJUCC permit) and include that amount in its fee proposal line item entitled **"Plan Review and Permit Fee Allowance."** A breakdown of each permit and application fee shall be attached to the fee proposal for reference.

NOTE: The NJUCC permit is excluded since it will be paid for by the State.

3. Applications

The Consultant shall complete and submit all permit applications to the appropriate permitting authorities and the costs shall be paid from the Consultant's permit fee allowance. A copy of the application(s) and the original permit(s) obtained by the Consultant shall be given to the DPMC Project Manager for distribution during construction.

4. Consultant Fee

The Consultant shall determine what is required to complete and submit the permit applications, obtain supporting documentation, attend meetings, etc., and include the total cost in the base bid of its fee proposal.

Any funds remaining in the permit allowance will be returned to the State at the close of the project.

B. HAZARDOUS MATERIALS TESTING AND REPORT ALLOWANCE

Consultant shall estimate the costs to complete the hazardous materials survey, sample collection, testing and analysis and preparation of a "Hazardous Materials Survey Report" noted in paragraph **VII.B** and enter that amount on their fee proposal line item entitled **"Hazardous Materials Testing and Report Allowance."** Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the proposal review and potential fee negotiations. The cost breakdown sheet shall include, but not be limited to, the following information:

- Description of tasks and estimated cost for the following:
    - Sample collection;
    - Sample testing; and
    - Preparation of an Hazardous Materials Survey Report

Any funds remaining in the Hazardous Materials Testing and Report Allowance will be returned to the State at the close of the project.

C. HAZARDOUS MATERIALS ABATEMENT DESIGN ALLOWANCE

The Consultant shall estimate the costs to prepare construction documents for hazardous materials abatement noted in paragraph **VII.B** and enter that amount on their fee proposal line item entitled **"Hazardous Materials Abatement Design Allowance."** Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the proposal review and potential fee negotiations. The cost breakdown sheet shall include a description of the tasks to be performed and the estimated cost of each task.

Any funds remaining in the Hazardous Materials Abatement Design Allowance will be returned to the State at the close of the project.

D. HAZARDOUS MATERIALS CONSTRUCTION ADMINISTRATION ALLOWANCE

Consultant shall estimate the cost to provide Construction Monitoring and Administration Services for hazardous materials abatement as noted in paragraph **VII.B** and enter that amount on their fee proposal line item entitled "**Hazardous Materials Construction Administration Allowance.**" Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the proposal review and potential fee negotiations. The cost breakdown sheet shall include a description of the tasks to be performed and the estimated cost of each task.

Any funds remaining in the Hazardous Materials Construction Administration Allowance will be returned to the State at the close of the project.

XIV. SOW SIGNATURE APPROVAL SHEET

This Scope of Work shall not be considered a valid document unless all signatures appear in each designated area below.

The client agency approval signature on this page indicates that they have reviewed the design criteria and construction schedule described in this project Scope of Work (including the subsequent contract deliverables and exhibits) and verifies that the work will not conflict with the existing or future construction activities of other projects at the site.

SOW APPROVED BY: James Wright 9/19/2025

JAMES WRIGHT, MANAGER DATE
DPMC PROJECT PLANNING & INITIATION

SOW APPROVED BY: 9/25/2025

JASON FREEBORN, PROJECT MANAGER DATE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOW APPROVED BY: Jeanette M Barnard 10.1.25

JEANETTE M. BARNARD, DEPUTY DIRECTOR DATE
DIV PROPERTY MGT & CONSTRUCTION

XV. CONTRACT DELIVERABLES

The following are checklists listing the Contract Deliverables that are required at the completion of each phase of this project. The Consultant shall refer to the DPMC publication entitled "Procedures for Architects and Engineers," 3.0 Edition, dated September 2022 available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf for a detailed description of the deliverables required for each submission item listed. References to the applicable paragraphs of the "Procedures for Architects and Engineers" are provided.

Note that the Deliverables Checklist may include submission items that are "S.O.W. Specific Requirements." These requirements will be defined in the project specific scope of work and included on the deliverables checklist.

This project includes the following phases with the deliverables noted as "Required by S.O.W" on the Deliverables Checklist:

SCHEMATIC DESIGN PHASE;

DESIGN DEVELOPMENT PHASE;

FINAL DESIGN PHASE;

PERMIT APPLICATION PHASE;

BIDDING AND CONTRACT AWARD;

CONSTRUCTION PHASE; and

PROJECT CLOSE-OUT PHASE

XVI. EXHIBITS

A. SAMPLE PROJECT SCHEDULE FORMAT
B. PROJECT SITE LOCATION MAP
C. WINDOW CONDITION AND STRUCTURAL ASSESSMENT

END OF SCOPE OF WORK

DPMC Project No.: P1364-00

Deliverables Checklist
Schematic Design Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
13.4.1.	A/E Statement of Site Visit						
13.4.2.	Narrative Description of Project						
13.4.3.	Building Code Information Questionnaire						
13.4.4.	Space Analysis						
13.4.5.	Special Features						
13.4.6.	Catalog Cuts						
13.4.7.	Site Evaluation						
13.4.8.	Subsurface Investigation						
13.4.9.	Surveys						
13.4.10.	Arts Inclusion						
13.4.11.	Design Rendering						
13.4.12.	Regulatory Approvals						
13.4.13.	Utility Availability						
13.4.14.	Drawings (6 Sets)						
13.4.15.	Specifications (6 Sets)						
13.4.16.	Current Working Estimate/Cost Analysis in CSI Format						
13.4.17.	Project Schedule						
13.4.18.	Formal Presentation						
13.4.19.	Scope of Work Compliance Statement						
13.4.20.	Schematic Design Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1364-00

Deliverables Checklist
Design Development Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
14.4.1.	A/E Statement of Site Visit						
14.4.2.	Narrative Description of Project						
14.4.3.	Building Code Information Questionnaire						
14.4.4.	Space Analysis						
14.4.5.	Special Features						
14.4.6.	Catalog Cuts						
14.4.7.	Site Evaluation						
14.4.8.	Subsurface Investigation						
14.4.9.	Surveys						
14.4.10.	Arts Inclusion						
14.4.11.	Design Rendering						
14.4.12.	Regulatory Approvals						
14.4.13.	Utility Availability						
14.4.14.	Drawings (6 Sets)						
14.4.15.	Specifications (6 Sets)						
14.4.16.	Current Working Estimate/Cost Analysis in CSI Format						
14.4.17.	Project Schedule						
14.4.18.	Formal Presentation						
14.4.19.	Plan Review/Scope of Work Compliance Statement						
14.4.20.	Design development Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1364-00

Deliverables Checklist
Final Design Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
15.4.1.	A/E Statement of Site Visit						
15.4.2.	Narrative Description of Project						
15.4.3.	Building Code Information Questionnaire						
15.4.4.	Space Analysis						
15.4.5.	Special Features						
15.4.6.	Catalog Cuts						
15.4.7.	Site Evaluation						
15.4.8.	Subsurface Investigation						
15.4.9.	Surveys						
15.4.10.	Arts Inclusion						
15.4.11.	Design Rendering						
15.4.12.	Regulatory Approvals						
15.4.13.	Utility Availability						
15.4.14.	Drawings (6 Sets)						
15.4.15.	Specifications (6 Sets)						
15.4.16.	Current Working Estimate/Cost Analysis in CSI Format						
15.4.17.	Project Schedule						
15.4.18.	Formal Presentation						
15.4.19.	Plan Review/Scope of Work Compliance Statement						
15.4.20.	Final Design Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1364-00

Deliverables Checklist
Permit Application Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
16.1.	N.J. UCC Permit Application						
16.4.	Drawings, Signed and Sealed (6 Sets)						
16.5.	Specifications, Signed and Sealed (6 Sets)						
16.6.	Current Working Estimate/Cost Analysis in CI Format						
16.7.	Project Schedule						
16.8.	Plan Review/Scope of Work Compliance Statement						
16.9.	Permit Application Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC Project Manager the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1364-00

Deliverables Checklist
Bidding and Contract Award Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
17.1.1.	Notice of Advertising						
17.1.2.	Bid Proposal Form						
17.1.3.	Bid Clearance Form						
17.1.4.	Drawings (6 Sets)						
17.1.5.	Specifications (6 Sets)						
17.1.6.	Construction Schedule						
17.3	Pre-Bid Conference/Mandatory Site Visit						
17.3.1.	Meeting Minutes						
17.4	Bulletins						
17.5	Post Bid Meeting						
17.6.	Contract Award "Letter of Recommendation"						
17.8.	Bid Protests - Hearings						
17.9.	Bidding and Contract Award Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1364-00

Deliverables Checklist
Construction Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
18.2.	Pre-Construction Meeting						
18.3.	Submittal Log						
18.4.	Construction Schedule						
18.5.	Project Progress Meetings						
18.7.	Contractor's Invoicing and Payment Process						
18.8.	Contractor Submittals						
18.10.	Testing						
18.11.	Shop Drawings (6 Sets)						
18.12.	As-Built & Record Set Drawings (6 Sets)						
18.13.	Change Orders						
18.14.	Construction Photographs						
18.15.	Field Observations						
18.17.	Construction Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1364-00

Deliverables Checklist
Project Close-Out Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
19.3.	Development of Punch List and Inspection Reports						
19.5.	Determination of Substantial Completion						
19.6.	Correction/Completion of Punch List						
19.7.	Submission of Close-Out Documentation						
19.7.1.	As-Built and Record Sets of Drawing (6 Sets)						
19.8.	Final Payment						
19.9.1.	Contractors Final Payment						
19.9.2.	A/E's Final Payment						
19.10.	Project Close-Out Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

Typical DPMC Project - Random Selection of Design Consultant

ID	Task Name	Start	Finish	Duration
0	**Typical Project Model**	**Mon 5/19/...**	**Fri 4/9/27**	**691 days**
1	**Project Initiation Phase**	**Mon 5/19/25**	**Mon 7/14/25**	**57 days**
2	Project Funding Received	Mon 5/19/25	Mon 5/19/25	1 day
3	Schedule Site Visit	Thu 5/22/25	Thu 5/22/25	1 day
4	Site Visit	Fri 5/30/25	Fri 5/30/25	1 day
5	Prepare Draft SOW	Mon 6/2/25	Fri 6/6/25	5 days
6	Distribute Draft SOW for Review	Mon 6/9/25	Mon 6/9/25	1 day
7	Review SOW	Tue 6/10/25	Mon 6/23/25	10 days
8	Review SOW	Tue 6/10/25	Mon 6/23/25	10 days
9	Review SOW	Tue 6/10/25	Mon 6/23/25	10 days
10	Receive Comments Revise SOW	Tue 6/24/25	Mon 6/30/25	5 days
11	Distribute Final SOW for Review & Signature	Tue 7/1/25	Tue 7/1/25	1 day
12	Review & Sign SOW	Wed 7/2/25	Wed 7/2/25	1 day
13	Review & Sign SOW	Mon 7/7/25	Mon 7/7/25	1 day
14	Review & Sign SOW	Thu 7/10/25	Thu 7/10/25	1 day
15	Forward SOW to Procurement	Mon 7/14/25	Mon 7/14/25	1 day
16	**Consultant Selection Phase**	**Tue 7/15/25**	**Mon 9/1/25**	**49 days**
17	Prepare Solicitation, Advertise Proj	Tue 7/15/25	Wed 7/16/25	2 days
18	Select Firms - Random Selection	Thu 7/17/25	Thu 7/17/25	1 day
19	Conduct Preproposal Meeting	Mon 7/28/25	Mon 7/28/25	1 day
20	Consultant Questions Due - Prepare and Issue Addenda	Tue 7/29/25	Tue 7/29/25	1 day
21	Receive Proposals - Distribute for Review	Tue 8/12/25	Tue 8/12/25	1 day
22	Review & Rank Proposals	Wed 8/13/25	Tue 8/19/25	5 days
23	Review & Rank Proposals	Wed 8/13/25	Tue 8/19/25	5 days
24	Review & Rank Proposals	Wed 8/13/25	Tue 8/19/25	5 days
25	Determine Rankings, Open Fee Proposals and Distribute to Committee	Wed 8/20/25	Wed 8/20/25	1 day
26	Negotiate Fee	Thu 8/21/25	Wed 8/27/25	5 days
27	Provide Funding for Consultant Contract	Thu 8/28/25	Thu 8/28/25	1 day
28	Complete Recommendation to Awa	Thu 8/28/25	Fri 8/29/25	2 days
29	Consultant Contract Award	Sat 8/30/25	Mon 9/1/25	2 days
30	**Design Phase**	**Sun 9/7/25**	**Fri 5/8/26**	**244 days**
31	Design Contract "Kick-Off" Meeting	Sun 9/7/25	Mon 9/8/25	2 days
32	Program Design Phase	Tue 9/9/25	Mon 10/6/25	28 days
33	Receive Program Submittal & Distribute for Review	Tue 10/7/25	Thu 10/9/25	3 days

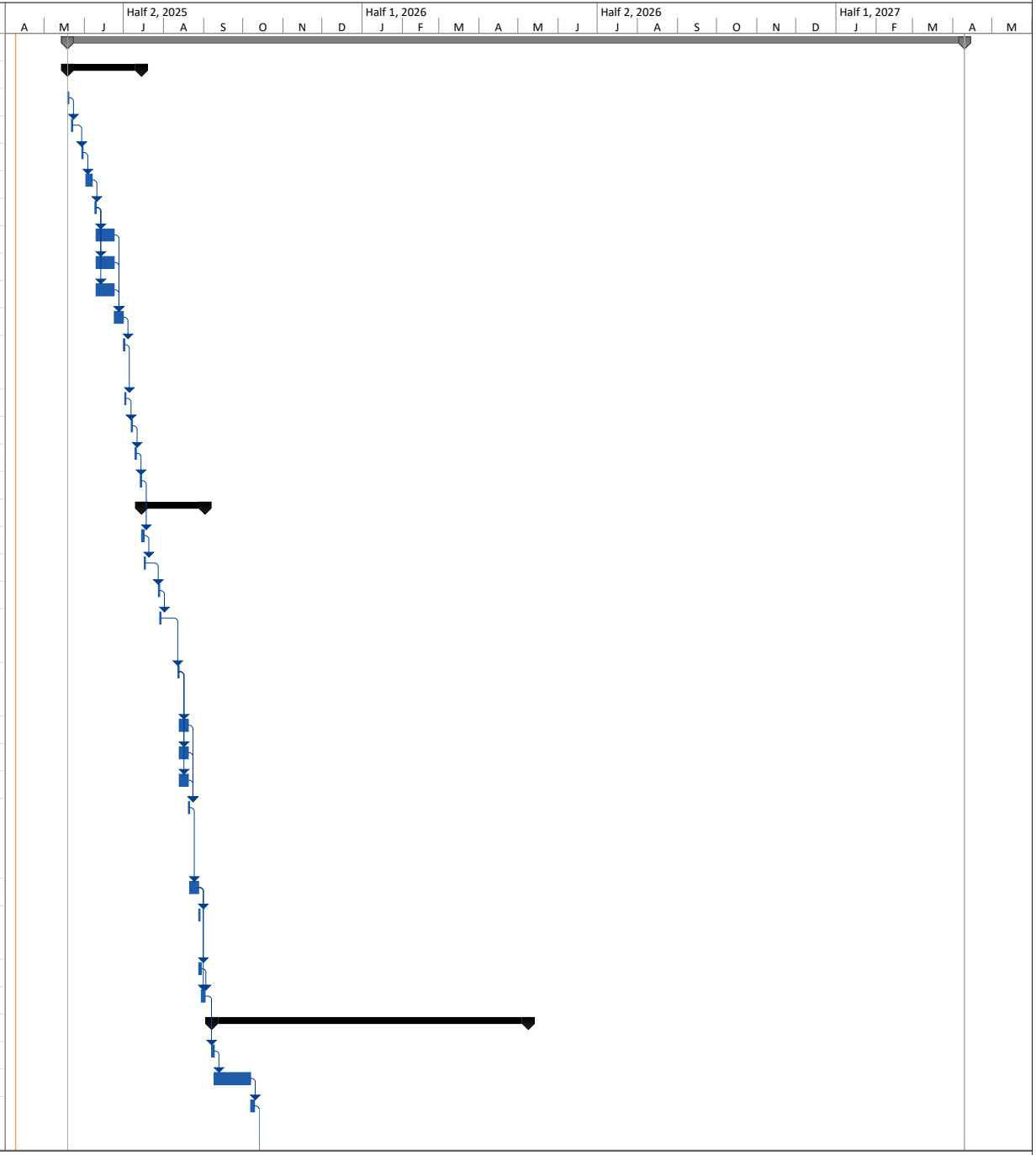


EXHIBIT 'A'

Typical DPMC Project - Random Selection of Design Consultant

ID	Task Name	Start	Finish	Duration
34	Program Phase Presentation/Submittal	Fri 10/10/25	Fri 10/10/25	1 day
35	Review Program Phase	Mon 10/13/25	Fri 10/24/25	10 days
36	Review Program Phase	Mon 10/13/25	Fri 10/24/25	10 days
37	Review Program Phase	Mon 10/13/25	Fri 10/24/25	10 days
38	Receive Program Phase Comments, Review & Consolidate and Forward to Consultant	Mon 10/27/25	Wed 10/29/25	3 days
39	Schematic Design Phase	Thu 10/30/25	Wed 11/26/25	28 days
40	Receive Schematic Submittal & Distribute for Review	Thu 11/27/25	Mon 12/1/25	3 days
41	Schematic Phase Presentation/Submittal	Tue 12/2/25	Tue 12/2/25	1 day
42	Review Schematic Phase	Wed 12/3/25	Tue 12/16/25	10 days
43	Review Schematic Phase	Wed 12/3/25	Tue 12/16/25	10 days
44	Review Schematic Phase	Wed 12/3/25	Tue 12/16/25	10 days
45	Receive Schematic Phase Comments, Review & Consolidate and Forward to Consultant	Wed 12/17/25	Fri 12/19/25	3 days
46	Design Development (DD) Design Phase	Sat 12/20/25	Fri 1/16/26	28 days
47	Receive DD Submittal & Distribute for Review	Mon 1/19/26	Wed 1/21/26	3 days
48	DD Phase Presentation/Submittal	Thu 1/22/26	Thu 1/22/26	1 day
49	Review DD Phase	Fri 1/23/26	Thu 2/5/26	10 days
50	Review DD Phase	Fri 1/23/26	Thu 2/5/26	10 days
51	Review DD Phase	Fri 1/23/26	Thu 2/5/26	10 days
52	Receive DD Phase Comments, Review & Consolidate and Forward to Consultant	Fri 2/6/26	Tue 2/10/26	3 days
53	Final Design Phase	Wed 2/11/26	Tue 3/10/26	28 days
54	Final Submittal & Distribute for Rev	Wed 3/11/26	Fri 3/13/26	3 days
55	Final Phase Presentation/Submittal	Sat 3/14/26	Mon 3/16/26	2 days
56	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
57	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
58	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
59	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
60	Receive Final Phase Comments, Review & Consolidate and Forward to Consultant	Tue 3/31/26	Thu 4/2/26	3 days
61	Final/Permit Design Phase	Fri 4/3/26	Thu 4/16/26	14 days

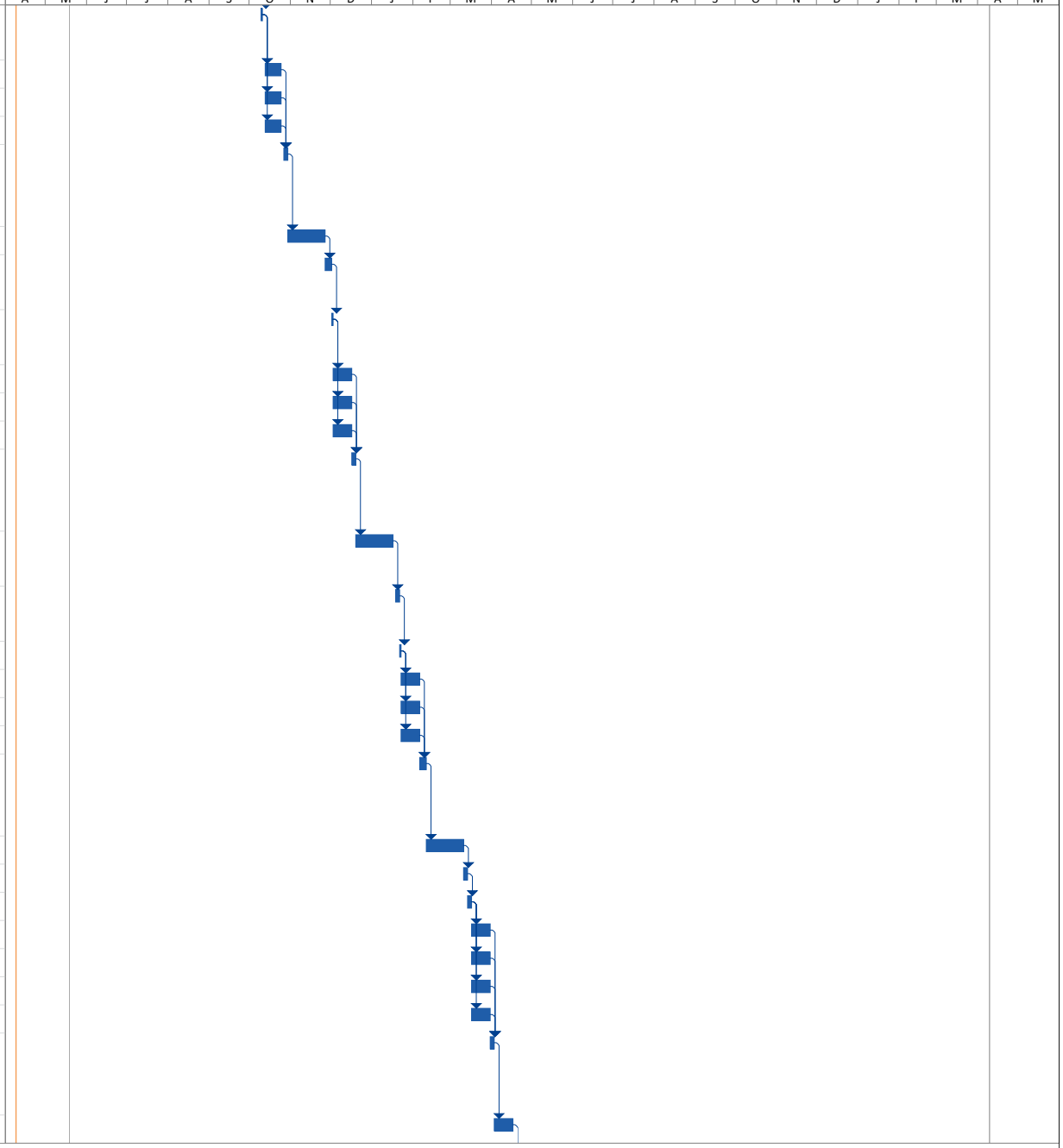


EXHIBIT 'A'

Typical DPMC Project - Random Selection of Design Consultant

ID	Task Name	Start	Finish	Duration
62	Final/Permit Submittal & Distribute for Review	Fri 4/17/26	Tue 4/21/26	3 days
63	Review Final/Permit Phase	Wed 4/22/26	Tue 5/5/26	10 days
64	Receive Final/Permit Phase Approval and Forward to	Wed 5/6/26	Fri 5/8/26	3 days
65	**Permit Acquisition Phase**	**Wed 4/22/26**	**Fri 5/22/26**	**31 days**
66	Prepare UCC Application, Bid Clearance & Submit Bid Package	Sat 5/9/26	Fri 5/15/26	7 days
67	Provide Funding for Construction	Wed 4/22/26	Wed 4/22/26	1 day
68	Secure Bid Clearance Including Funding Verification	Mon 5/18/26	Fri 5/22/26	5 days
69	**Advertise-Bid-Award Phase**	**Mon 5/25/26**	**Thu 7/23/26**	**60 days**
70	Advertise Project for Construction	Mon 5/25/26	Mon 5/25/26	1 day
71	Conduct Pre-Bid Meeting	Tue 6/9/26	Tue 6/9/26	1 day
72	Contractor Questions Due - Prepare and Issue Bulletin	Mon 6/15/26	Wed 6/17/26	3 days
73	Construction Bids Due - Open Bids	Tue 6/23/26	Tue 6/23/26	1 day
74	Conduct Post Bid Review Meeting	Mon 6/29/26	Mon 6/29/26	1 day
75	Prepare and Submit Recommendation for Award	Tue 6/30/26	Wed 7/1/26	2 days
76	Prepare and Submit Recommendation for Award	Thu 7/2/26	Fri 7/3/26	2 days
77	Prepare Contract and Schedule Award Meeting	Mon 7/6/26	Fri 7/10/26	5 days
78	Conduct Contract Award Meeting/Issue NTP	Thu 7/16/26	Thu 7/16/26	1 day
79	Sign/Seal UCC Permit Applications	Thu 7/16/26	Thu 7/16/26	1 day
80	Secure UCC Permit from DCA	Fri 7/17/26	Thu 7/23/26	5 days
81	**Construction Phase**	**Fri 7/24/26**	**Wed 1/20/27**	**181 days**
82	Conduct Construction "Kick-Off Meeting"	Fri 7/24/26	Fri 7/24/26	1 day
83	Complete Construction - Achieve Substantial Completion	Sat 7/25/26	Wed 1/20/27	180 days
84	**Project Close-Out Phase**	**Thu 1/21/27**	**Fri 4/9/27**	**79 days**
85	Complete Punch List	Thu 1/21/27	Fri 2/19/27	30 days
86	Close Out Construction Contract	Mon 2/22/27	Fri 2/26/27	5 days
87	Close Out Consultant Contract	Mon 3/1/27	Fri 4/9/27	30 days

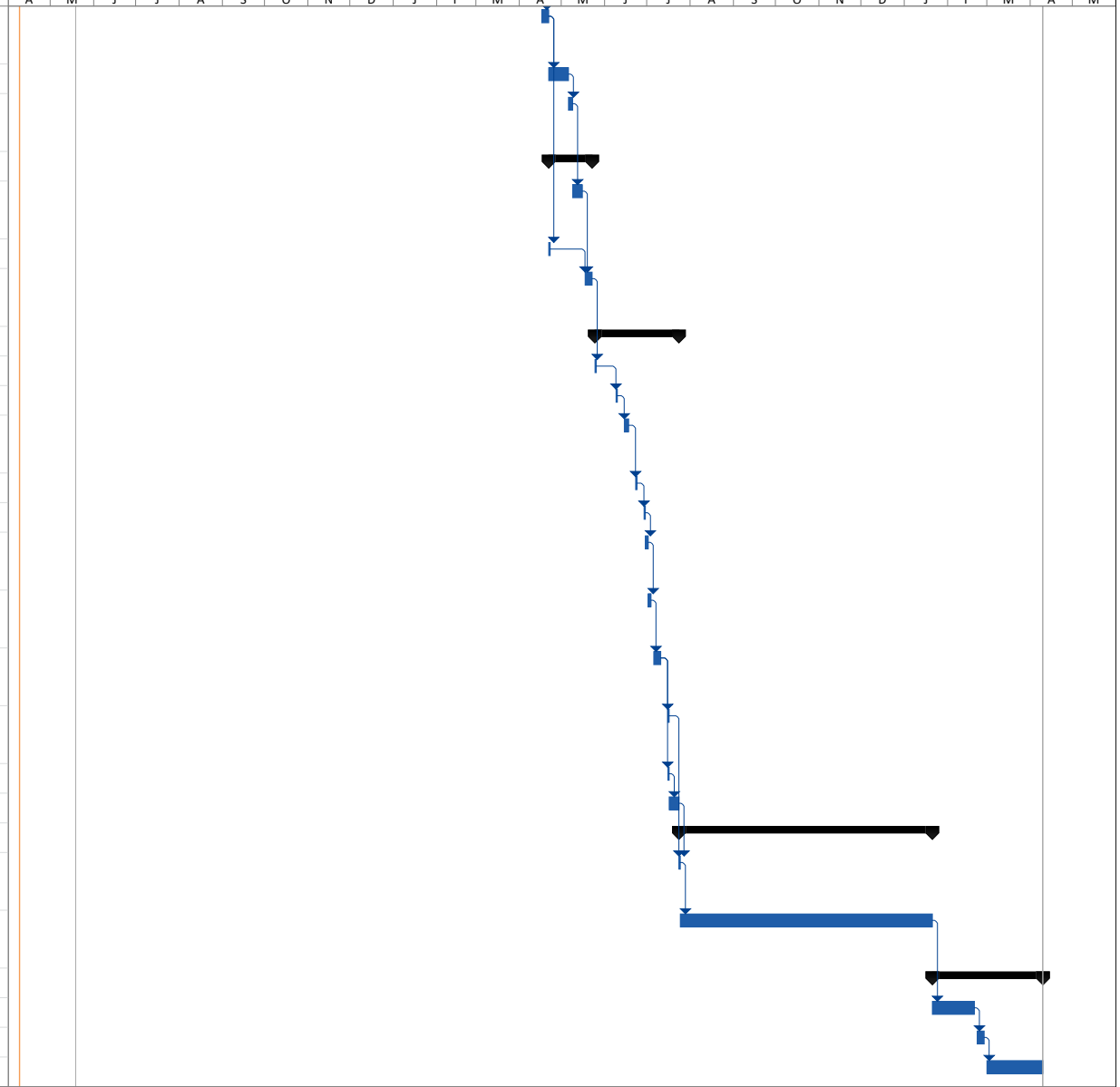


EXHIBIT 'A'

Typical DPMC Project - Random Selection of Design Consultant

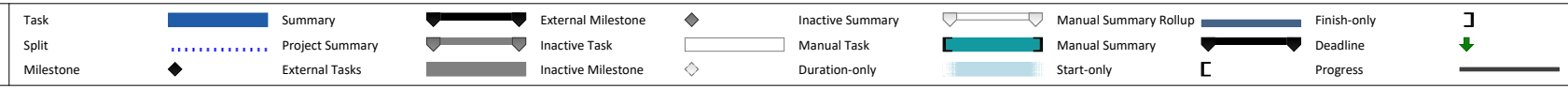


EXHIBIT 'A'

Project Site Location Map

Boxwood Hall Historic Site

EXHIBIT ‘B’

WINDOW CONDITIONS AND STRUCTURAL ASSESSMENT AT BOXWOOD HALL RESIDENCE STATE HISTORICAL SITE & MUSEUM 1073 E. JERSEY ST., ELIZABETH, NJ 07201

Prepared by: **Richard I. Lees, R.A.**
Ronald A. Sebring Associates, LLC
2156 Route 37 West, Suite 201
Manchester, NJ 08759

For the New Jersey Department of Environmental Protection – Natural and Historic Resources

June 29th, 2021

EXHIBIT 'C'

TABLE OF CONTENTS

EXHIBIT 'C'

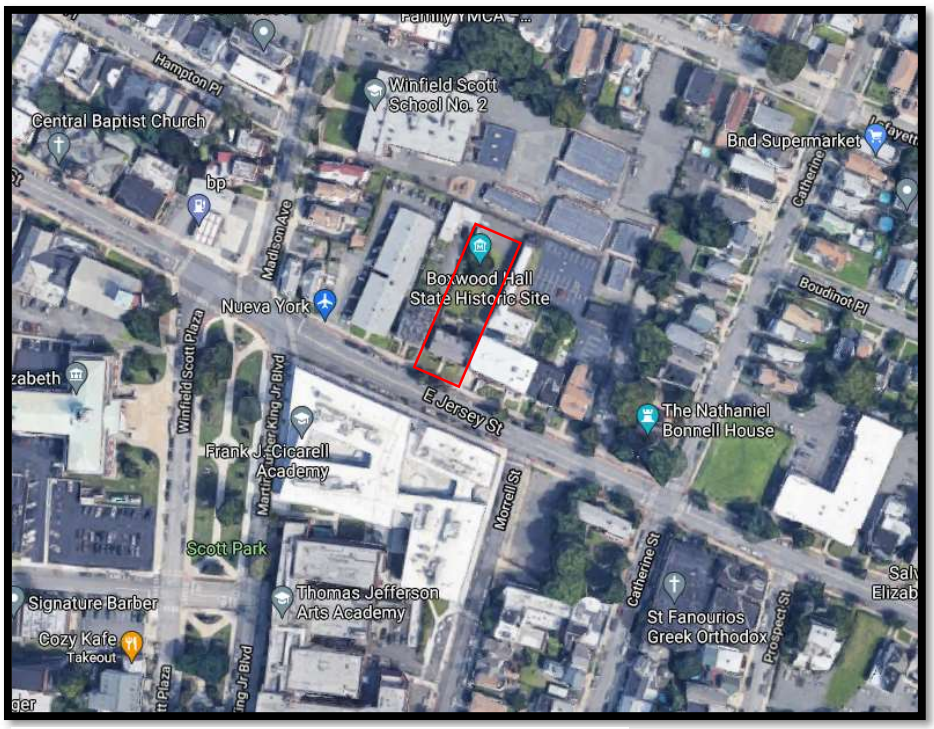
Executive Summary

- The Historic Boxwood Hall site is located within the City of Elizabeth, New Jersey at 1073 East Jersey Street and currently operates as a Historic House Museum.
- The Historical Boxwood Hall Residence was constructed in approximately 1750, and is currently listed as a National and State Historic Landmark.
- Ronald A. Sebring Associates, LLC., was commissioned by the New Jersey Department of Environmental Protection, Natural and Historic Resources in response to the foundation wall at one corner of the building being dislodged at and above grade level, as well as various degrees of damage and deterioration throughout multiple windows on all floors.
- The extent and purpose of this Conditions Assessment is to conduct a thorough physical evaluation of the existing stone foundation and each window throughout the First and Second Floor, including the front entrance door of the building.
- Windows are in various states of condition with all requiring a level of repair.
    - The various defects discovered on the exterior of the windows included:
        - cracked glass windowpanes
        - missing or damaged sill blocks
        - deterioration and rotting of exposed wood
        - missing or damaged copper flashings
        - sagging meeting rails
    - The various defects discovered on the interior side of the windows included:
        - deterioration of the interior stools and stops
        - gaps forming between bottom rails and stool
        - cracks forming throughout various muntins (grills)
        - peeling of paint
        - cracked trim work surrounding the windows.
- The Entrance Door also shows similar wear when compared to the defects present throughout the windows.
- The window and entrance door repair recommendations were broken down into “Repair Class 1, 2, and 3”, based on the the Secretary of the Interior's Standards for the Treatment of Historic Properties methods.
- An Archeological Survey was required to conduct the excavation at the subject area of the foundation because of the historical significance of the site.
- The Archeological Survey, provided by Richard Grubb & Associates, is included as “Appendix – B”.
- The Structural Assessment, provided by 5-Hole Structural Engineering, is attached as “Appendix - A” followed by a broken down Construction Cost Estimate included in “Appendix – C”
- The estimated construction cost for the recommended repairs to the historic windows and doors is approximately **$137,796**
- The estimated construction cost for the recommended structural rehabilitation of the foundation is approximately **$51,206**

EXHIBIT 'C'

Boxwood Historical Site & Museum – Assessment Overview

1. In September 2020, Ronald A. Sebring Associates, LLC., was commissioned by the New Jersey Department of Environmental Protection, Natural and Historic Resources in response to the discovery of the foundation wall at one corner of the building being dislodged and shifted at and above grade level, as well as various degrees of damage and deterioration throughout multiple windows on all floors. The extent and purpose of this Conditions Assessment is to conduct a thorough physical evaluation of the existing stone foundation and each window across the First and Second Floor, including the front entrance door of the building.
2. The Historic Boxwood Hall site is located within the City of Elizabeth, New Jersey at 1073 East Jersey Street, and currently operates as a Historic House Museum.



Boxwood Hall Residence Location Map

3. The Historical Boxwood Hall Residence was constructed in approximately 1750, and is currently listed as a National and State Historic Landmark. the Residence was once occupied by Mr. Elias Boudinot, a previous President of the Continental Congress (1782-1783).
4. The residence has seen many rehabilitation and repair projects throughout its lifetime. The most notable being the modification conducted during the 19th century in which two wings were demolished, and two additional stories were added.

Elevation from Historical American Buildings Survey (HABS) Drawing

EXHIBIT 'C'

5. Today, the facility takes pride in the fact that much of the original construction remains intact. This includes the interior paneling, flooring, and a majority of the building's framing. The majority of other items have either been partially restored or replaced utilizing historical materials to match the original design.
6. The existing roof has been recently replaced through a design created by Ronald A. Sebring Associates, LLC., and with construction completed in mid-2017. The roof replacement consisted of removing the existing cedar shake shingles and wood decking to replace with new cedar shake shingles over spaced sheathing.
7. On January 19th, 2021, Ronald A. Sebring Associates, LLC. sent a field team to the site to perform the survey work required. During the visit, RASA was able to conduct a detailed physical evaluation of the interior and exterior of each individual window throughout the building. The physical evaluation of these windows includes noting of all physical and structural defects, evidence of deterioration or rot, and provides detailed recommendations for repair at each window and the entrance double door.

New Roof Installed at Boxwood Hall Residence

8. Windows are in various states of condition with all requiring a level of repair.
    a. The various defects discovered on the exterior of the windows during the investigation include cracked glass windowpanes, missing or damaged sill blocks, deterioration and rotting of exposed wood, missing or damaged copper flashings, sagging meeting rails, missing hinges for shutters, and missing or extruding nails.
    b. The various defects discovered on the interior side of the windows include minor deterioration of the interior stools and stops, gaps have begun forming between the bottom rails and the stool, cracks forming throughout various muntins (grills), peeling of paint, and cracked trim work surrounding the windows. The front door of the building also contains a similar amount of wear.

EXHIBIT 'C'

9. The damage that was found throughout the building's windows and doors are all common signs of wear with wooden window construction as moisture intrusion is generally unavoidable. Most of the discovered damage can be repaired by a skilled contractor within the trade. A breakdown of the repairs needed at each window is included within this study and necessary repairs and possible methods of action have been detailed.
10. On March 31st, 2021, Ronald A. Sebring Associates, LLC. once again visited the site in conjunction with Archaelogical Consultant, Nicole Herzog of Richard Grubb & Associates and Thomas Langan, Structural Engineer of 5-hole Structural Engineering. The purpose of this site visit was to conduct the physical and structural conditions assessment of the dislodged and shifted area within the foundation wall.
11. The Archaeoligical excavation allowed for a visual analaysis of the existing structure. The Structural Engineer determined that the existing feldstone foundation wall is not experiencing any movement and therefore is stable. The brownstone exterior foundation wall is what is noticeably displaced, most likely caused by water infilitration and mortar deterioration.

Excavation Conducted by Archaeologists

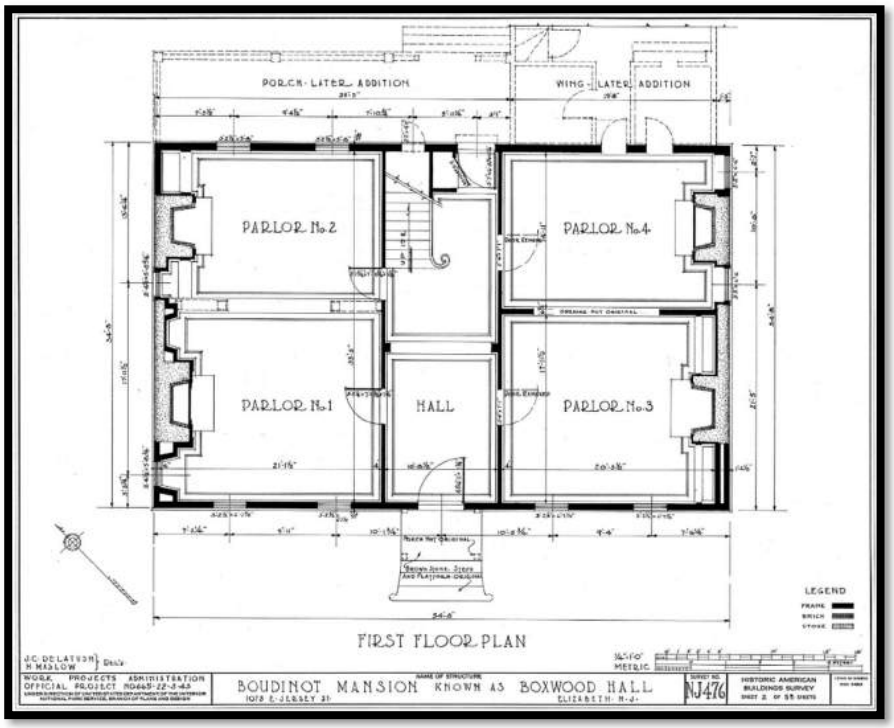
12. Upon further investigation of the exposed exterior foundation wall, the Structural Engineer determined that this deterioration is evident throughout the entirety of the exposed stone foundation wall.
13. The estimated construction cost of all of the proposed repairs and preservation work, including the stone foundation repairs, foundation repointing, and window repairs, is approximately **$189,002**

This report celebrates the history of one of the oldest still standing structures in the Historical State of New Jersey, as well as the efforts made by the Boxwood Hall Memorial Association.

EXHIBIT 'C'

Building Background

The Boxwood Hall Residence was constructed in the year 1750 by Mr. Samuel Woodruff, the presiding mayor of Elizabethtown. The historic building was constructed of Georgian design. The construction consists of a brick structure and features a symmetrical interior, windows, and shutters. Following its original construction, the building was intensely modified at the end of the 19th century. The modification included demolition of two lateral wings, the gable roof, and two additional stories were added under a four-sided gambrel style roof.



First Floor Plan from Historic Drawings

During the 1930's the Boxwood Hall Residence was threatened with demolition. A non-profit was created in order to protest and save the historical residence in response. The Boxwood Hall Memorial Association raised the required funds to purchase the building and property and in turn, deeded it to the State of New Jersey. Following this purchase and renewed interest in the structure, a restoration project was issued by the State of New Jersey. This restoration took place in the 1940's and included the removal of the 19th century modifications and attempted to restore the original design as best as possible. After removing the modifications made to the structure, the window sashes and original gable style roof were reconstructed, the two inside exterior chimneys were repointed, and the exterior brick was covered with wood shingle siding. The windows were given historical shutters to match the original design. It is currently noted that the remaining frame, interior paneling, and floors are largely original to the 18th century construction.

Historical Photo of Boxwood Hall Circa. 1938

The historical building has solidified itself as a historical monument within the area as it has connections to many integral points within early American history, being utilized by various well-known historical figures such as Elias Boudinot and Alexander Hamilton. The residence is currently owned and operated by the State of New Jersey as a museum, and the New Jersey Department of Environmental Protection, Natural and Historic Resources currently oversees all maintenance, construction, and repair for the establishment.

EXHIBIT 'C'

Over time, general maintenance and repair construction has taken place at the Boxwood Hall Residence. In 2017, the Boxwood Residence had undergone a complete roof replacement which was designed and managed by RASA. The roof replacement consisted of the removal of the existing cedar shake roof system down to the structural solid board sheathing and an installation of a new hand split cedar shake roofing system. Repointing of the existing chimneys, and replacement of the existing dormers was also completed to ensure a watertight seal. Other projects that were completed for the Boxwood Hall Residence by Ronald A. Sebring Associates LLC, included the replacement of the basement windows and repairs to the existing fire escape system.

Photograph From Fire Escape Repairs

Photograph Taken During Roof Replacement

EXHIBIT 'C'

WINDOW CONDITIONS ASSESSMENT

Overall View of North Facade Window

The damage that has accumulated over time to the Boxwoood Hall Residence was apparent when the roof replacement project was taking place and many of the same issues observed as part of the roof have shown themselves when evaluating the current integrity of the window structure.

Currently, the windows have experienced a large amount of wear and tear as some components are missing from the system and others have core components, such as the meeting rail, that have began to deteriorate beyond salvagability. The cause of the deterioration appears to be stemming from two possible catalysts; One being the prolonged exposure to the elements such as moisture, high winds, and UV rays from sunlight without continued maintenance. As the paint began to peel and separate from the wood, moisture began to puddle and saturate the wood. The second being that frequent use over time has weakened the joints within the window construction. Continual operation over the years combined with various temperature changes, have weakened the joints which has caused, in most cases, the seperation between the stool and the bottom rail, although it is evident in other locations as well. These two major factors are believed to be the root of all major elements that are in need of repair throughout the windows documented in this Study.

The major points of deterioration discovered consistently occurred along the bottom rail and sill on the exterior of the window and in many cases, the bottom wooden sill stop was missing entirely. The window sill construction was designed with a very light slope to ensure that water did not pool at the base of the window sill, although over time, as the wood began to deteriorate that slope became non-existent. This effectively allowed for moisture to gather and quickly effect the bases of the windows.

EXHIBIT 'C'

Damaged Muntin at Exterior

Another point of concern for the current integrity of the windows was the condition of the muntins. These wooden muntin bars are what seperates and holds the individual panes of glass in the windows. As the conditions of the windows started to fade with continual use and seperation began, moisture collected at the joints and seams between each muntin. With no overcoat of paint to prevent moisture from being absorbed into the wood, the muntins have expanded and contracted with the varying temperatures throughout the seasons, this has caused deterioration at the muntins as well as in some locations, the seperation of wood at the joints. This may have caused some of the window panes to begin to crack and shudder during high winds.

Other apparent issues that are noted within this study are evident on a per window basis and are explored further in the individual assessment of each window presented in the following pages.

Overall, it is believed that the work required to return the windows and doors to good and operational condition and can be broken down into three general categories. The first (Repair Class 1) being that many apparent issues can be repaired and maintened through routine maintenance procedures, the second (Repair Class 2) being that some windows require structural stabilization and repair of damaged wood and other components, and the third (Repair Class 3) being complete replacement and resetting of integral parts of the window or door.

The “Repair Class” method of determining the severity of damage throughout a historical window is detailed thoroughly within the U.S. Department of the Interior National Park Service’s Cultural Resources. These repair classes are generally described as *“the actions necessary to return a window to "like new" condition will fall into three broad categories: 1) routine maintenance procedures, 2) structural stabilization, and 3) parts replacement. These categories will be discussed in the following sections and will be referred to respectively as Repair Class I, Repair Class II, and Repair Class III. Each successive repair class represents an increasing level of difficulty, expense, and work time. Note that most of the points mentioned in Repair Class I are routine maintenance items and should be provided in a regular maintenance program for any building. The neglect of these routine items can contribute to many common window problems.”* This method, as well as the details described by the U.S Department of Interior National Park Service’s Cultural Resources, were utilized as a basis for the individual window assessments conducted by RASA.

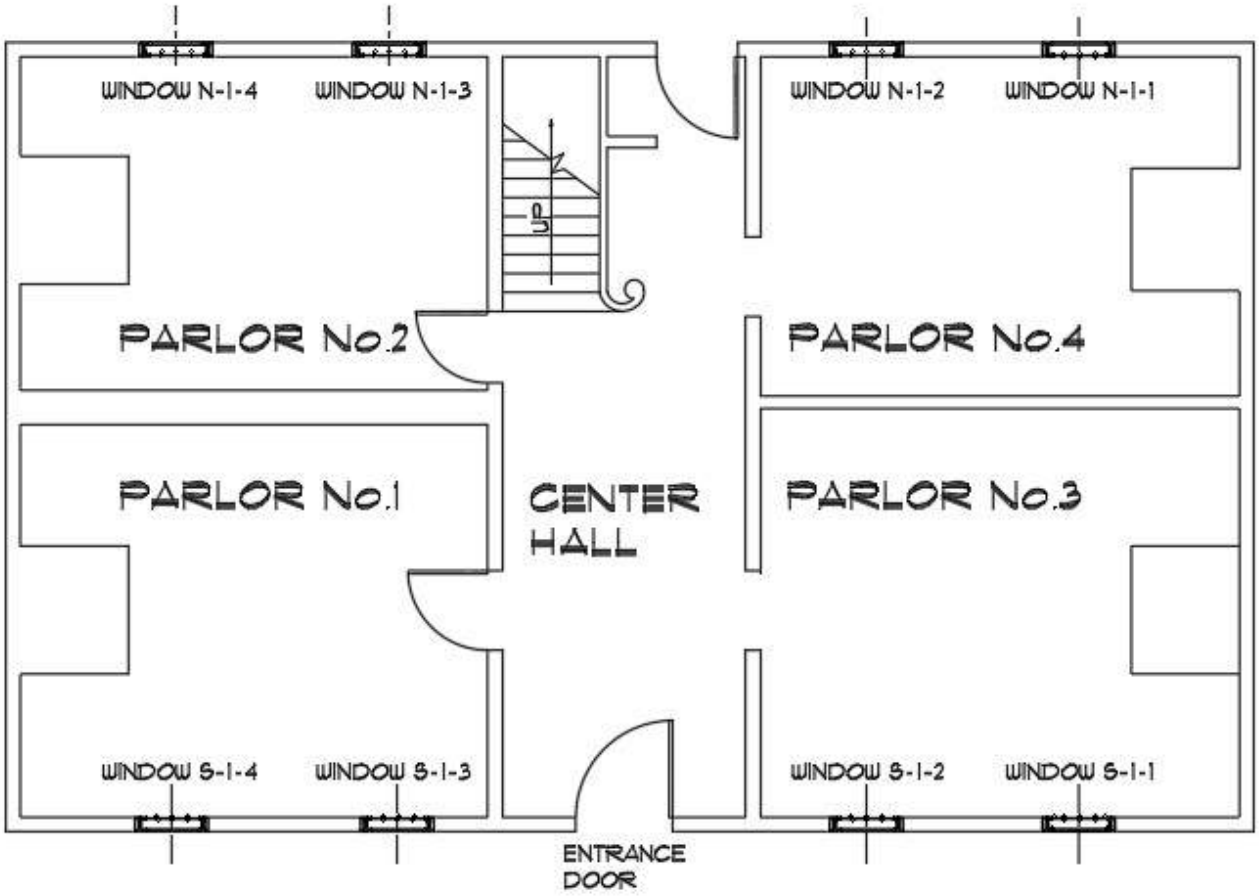
Assessment Notes and Diagrammatic Drawings

Individual assessments were done on each exterior window throughout the building. A repair class schedule and detailed diagram showing each window was created (See Below). The overall schedule and diagram portray the location and work necessary for each individual window. The window designation utilize a Direction/Floor/Number starting from left to right as a naming convention. For example, the leftmost window on the first floor of the north elevation will be shown as N-1-1. The Repair Class Schedule shows all of the windows and what repair class of work will be necessary at each window (See repair class definitions above).

WINDOW REPAIR CLASS SCHEDULE

Window No./Location	Repair Class 1	Repair Class 2	Repair Class 3
S-1-1		X	X
S-1-2		X	
S-1-3		X	
S-1-4		X	
S-2-1		X	
S-2-2			X
S-2-3	X		
S-2-4		X	
S-2-5		X	
N-1-1		X	
N-1-2		X	
N-1-3			X
N-1-4			X
N-1-5			X
N-2-1	X		
N-2-2	X		
N-2-3		X	
N-2-4	X		

EXHIBIT 'C'



FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

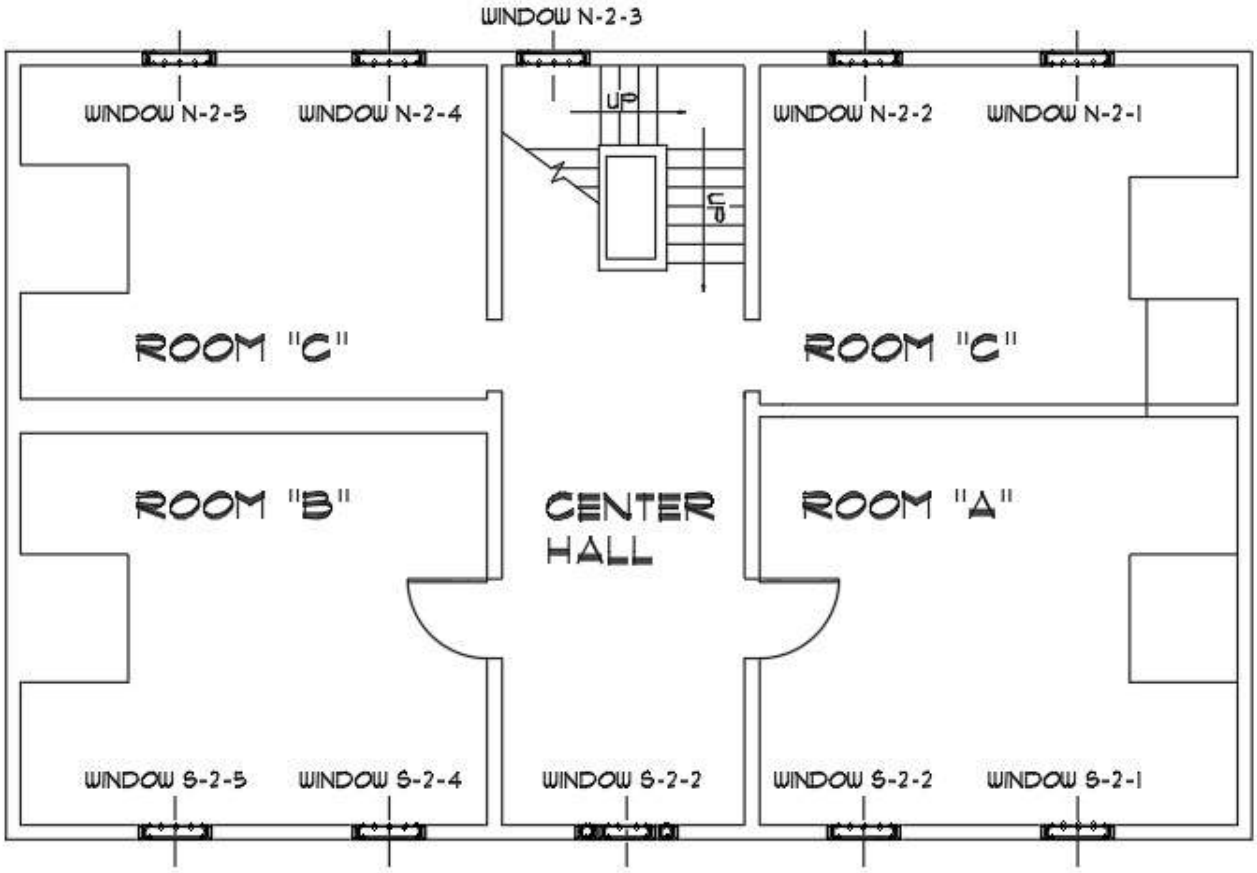
HISTORICAL BOXWOOD HALL RESIDENCE
1073 EAST JERSEY STREET
ELIZABETH, UNION COUNTY, NJ 07201

DRAWN	DATE
ARC	06/22/21

R.	BY	DATE

RONALD A. SEBRING ASSOCIATES, LLC
ARCHITECTURE AND DESIGN

EXHIBIT 'C'



SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"

HISTORICAL BOXWOOD HALL RESIDENCE
1073 EAST JERSEY STREET
ELIZABETH, UNION COUNTY, NJ 07201

DRAWN	DATE
ARC	06/22/21

R.	BY	DATE

RONALD A. SEBRING ASSOCIATES, LLC
ARCHITECTURE AND DESIGN

EXHIBIT 'C'

Individual Window Assessment

The individual window assessments included an inspection of both the interior and exterior of the various components at each window across each floor. The written assessment for each window includes a diagram of the exterior and section of the window showing each damaged/deteriorated piece, a short description of the issues present, and photographs of the window and any notable defects.

Window S-1-1

The exterior of this window shows evidence of deterioration and rot throughout the wood. The deterioration is present at both the bottom sill and the meeting rail. There is some basic wear and damage present along the bottom muntin as well as the left-hand stile. The bottom sill base block has been damaged beyond repair and is essentially disconnected from the window system. There are various nail pops throughout the meeting rail. Two glass panes also have a crack present and will need replacement. Along the interior of window S-1-1 there is continuous deterioration along the inside of the meeting rail, which is also present along the exterior and a slight gap is beginning to develop between the inside sill block and the window itself, causing a rattling to occur between the window and its frame. The paint present throughout the window is also beginning to peel and will need to be removed and repainted.

Overall, this window should be able to be repaired utilizing repair class 2 and 3 methods of repair. Other than replacing the bottom sill block and two glass windowpanes, the meeting rail deterioration is the main issue present at this window and although it is present at both the interior and exterior, if the proper technique is used, the window should be able to be restored to its working condition while all of its original pieces remain intact.

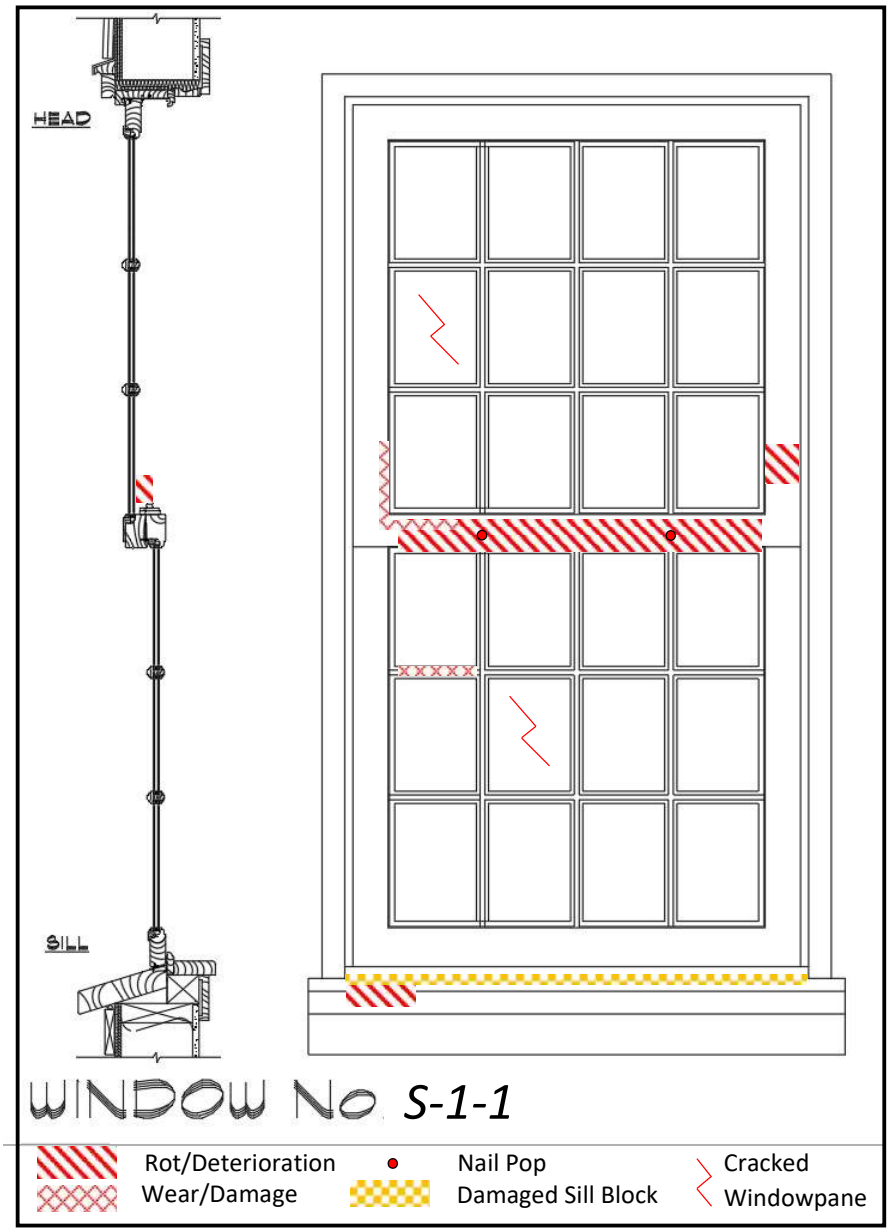


EXHIBIT 'C'

Photographs of Window S-1-1

Damaged/Deteriorated Exterior Meeting Rail

Damaged/Deteriorated Interior Meeting Rail

EXHIBIT 'C'

Window S-1-2

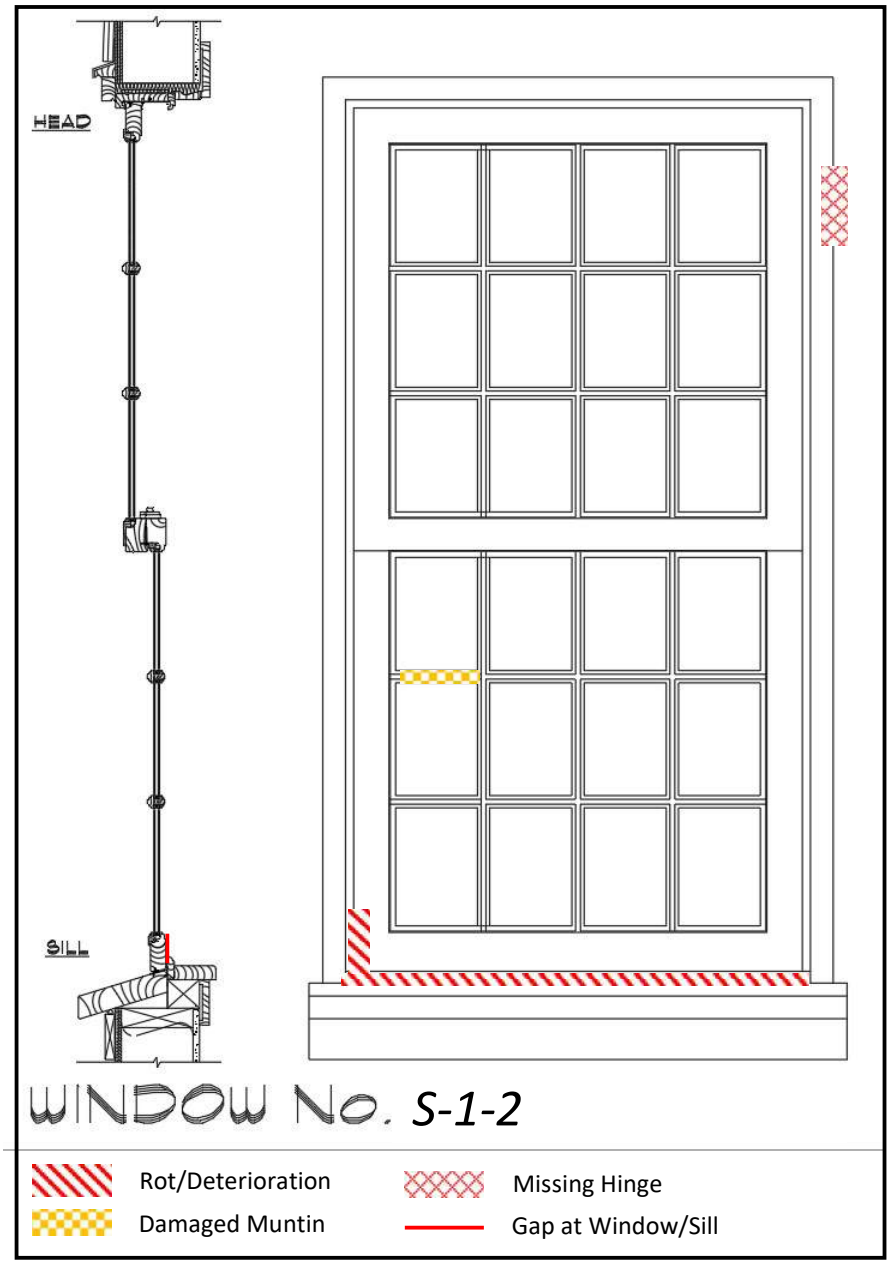
This window has issues present on both the exterior and interior faces. The issues present along the exterior of the building include:

- Broken/Split Wood
- Deterioration/Rot throughout the wood present
- Missing components such as the metal hinge for the existing shutter

The issues that are present through the interior of the building include:

- Gap beginning to form along between the base sill and the window

The issues present at Window No.S-1-2 would fall under “repair class 2” as nothing should require complete replacement. All general maintenance procedures should be conducted here as well, such as repainting the interior and exterior faces of the window.



Missing Hinge

Gap Between Sill and Window

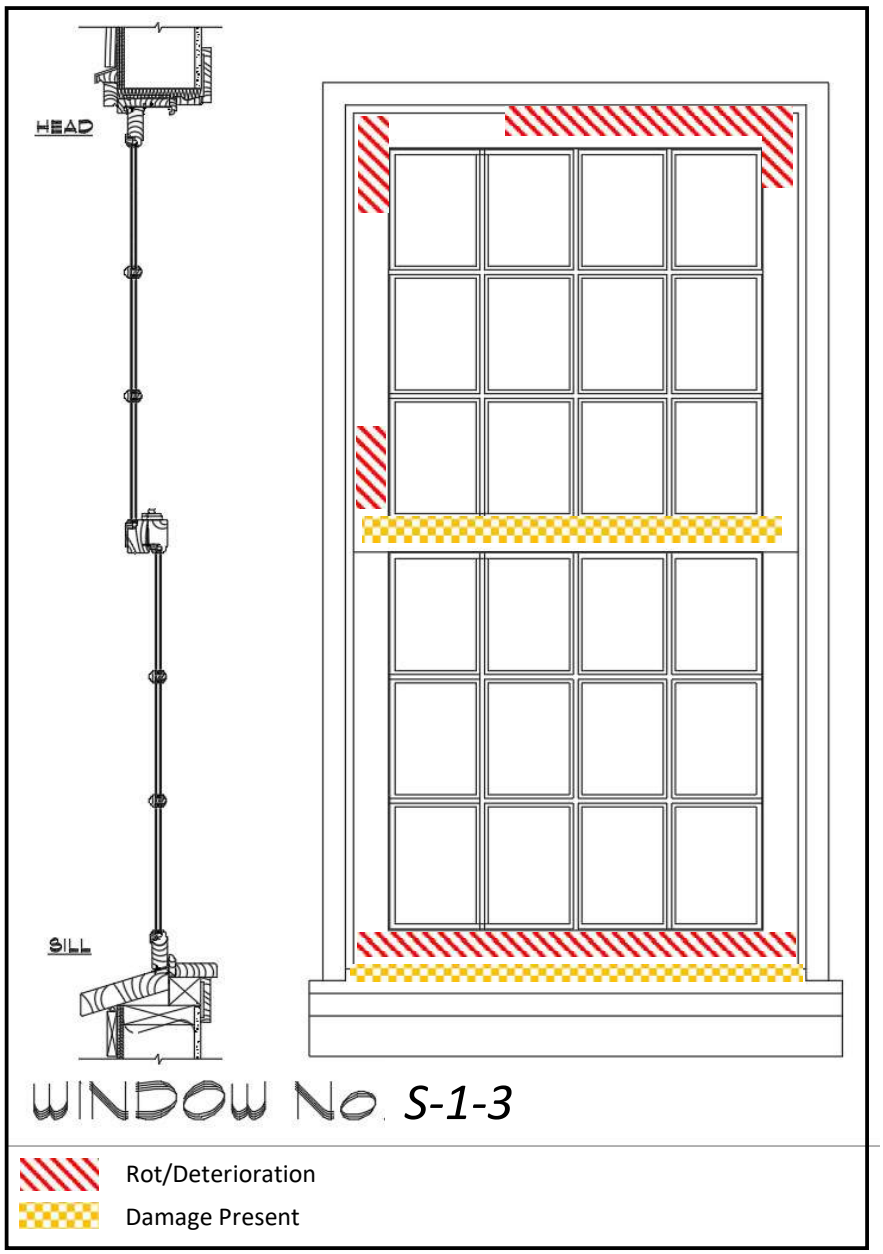
EXHIBIT 'C'

Window S-1-3

This window has issues present on mainly the exterior face. The interior face only shows need for minor maintenance. The issues present along the exterior of the building indlude:

- Deterioration of wood face in multiple areas
- Damaged sill stop base
- Meeting Rail showing signs of structural integrity loss and beginning to sag

The issues present at window S-1-3 would fall under “Repair Class 2”. The exterior face of this window will mainly require epoxy consolidation in areas in which deterioration/rot has begun to take place, replacement or reinforcing of the meeting rail, and replacing of the sill block at the base of the window. All general maintenance procedures should be conducted here as well, such as repainting the interior and exterior faces of the window.



Sagging Meeting Rail

Damaged Sill Block

EXHIBIT 'C'

Window S-1-4

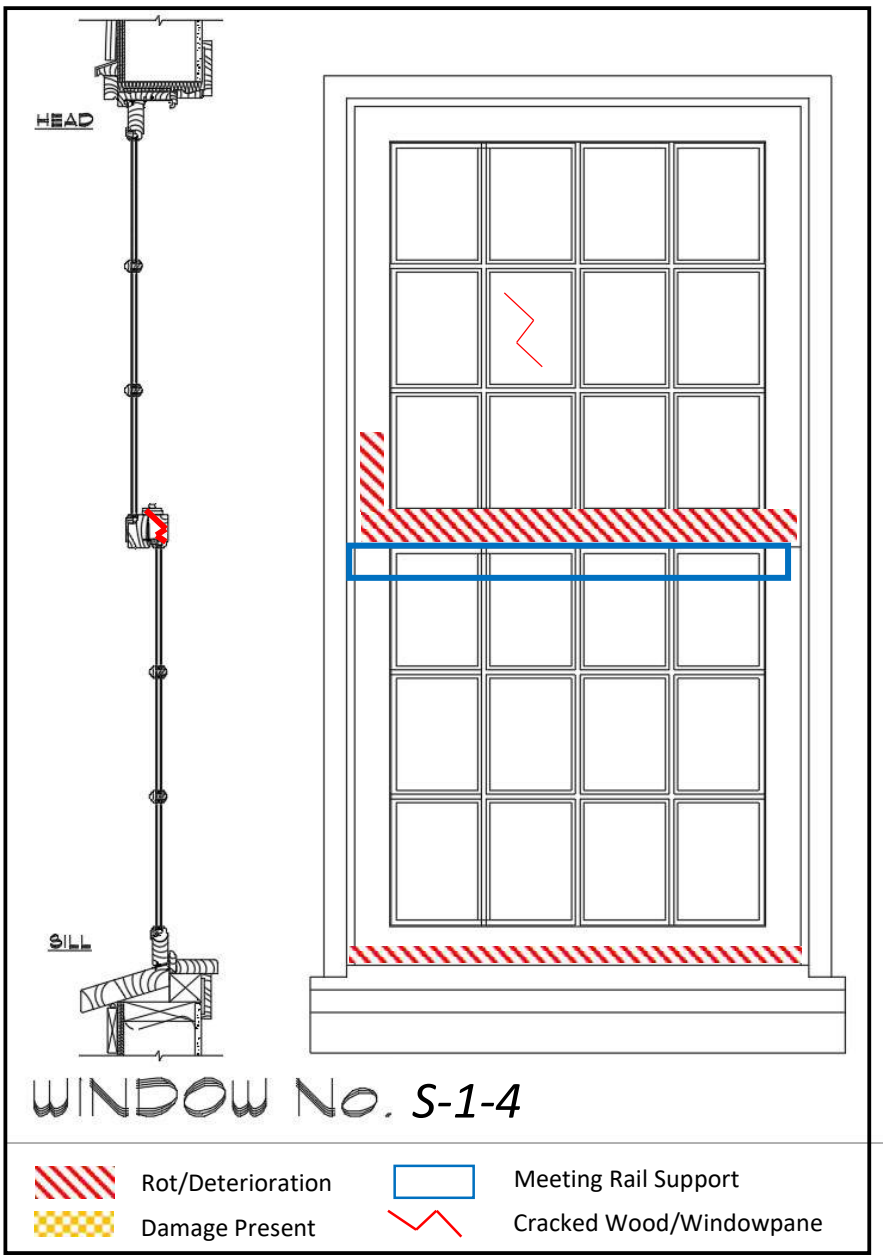
This window has issues present on both the exterior and interior faces. The issues present along the exterior of the building include:

- Deterioration throughout wood face
- Temporarily supported meeting rail due to degradation of wood
- Missing bottom sill stop
- Cracked windowpanes

Issues present along the interior of the window include:

- Deteriorated meeting rail
- Excessive paint peeling at base of window
- Cracked wood at meeting rail

The window currently has a reinforcing block of wood that is supporting the meeting rail, as well as sealant placed, as it has already began to deteriorate. The meeting rail will need replacement under “Repair Class 3” and a new sill block will need to be provided. Other damage may be repaired through means detailed in “repair class 2”. All general maintenance procedures should be conducted here as well, such as repainting the interior and exterior faces of the window.



Damaged Meeting Rail

Reinforcing Block at Meeting Rail

EXHIBIT 'C'

Window S-2-1

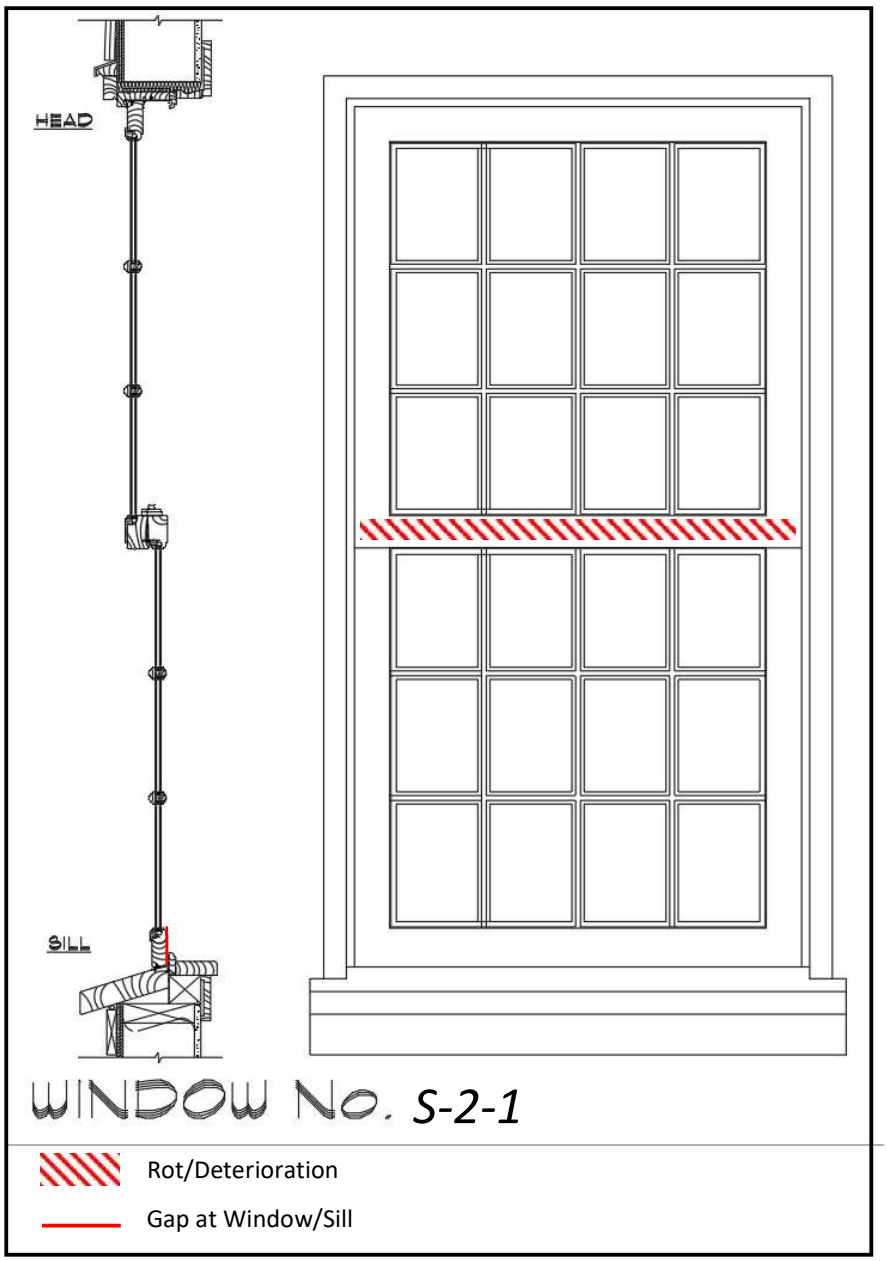
It is to be noted that all windows throughout the Second Floor have additional painted metal sill flashings and head flashings.This window has issues present on both the exterior and interior faces. The issues present along the exterior of the window include:

- Evidence of the beginnings of wood deterioration and rot at meeting rail
- Deterioration and rot present at the bottom right section of window panes

Issues present along the interior of the window include:

- Cracking down and throughout the interior trim
- Gap beginning to form along between the base sill and the window.

The issues present at window S-2-1 fall under "Repair Class 2". The exterior face of this window will mainly require epoxy consolidation in areas in which deterioration/rot has begun to take place. The cracked interior trim and gap between the base sill and window can be repaired utilizing standard repair and rehabilitation methods, including the repainting of the window.



Beginning of Deterioration

Gap at Window / Sill

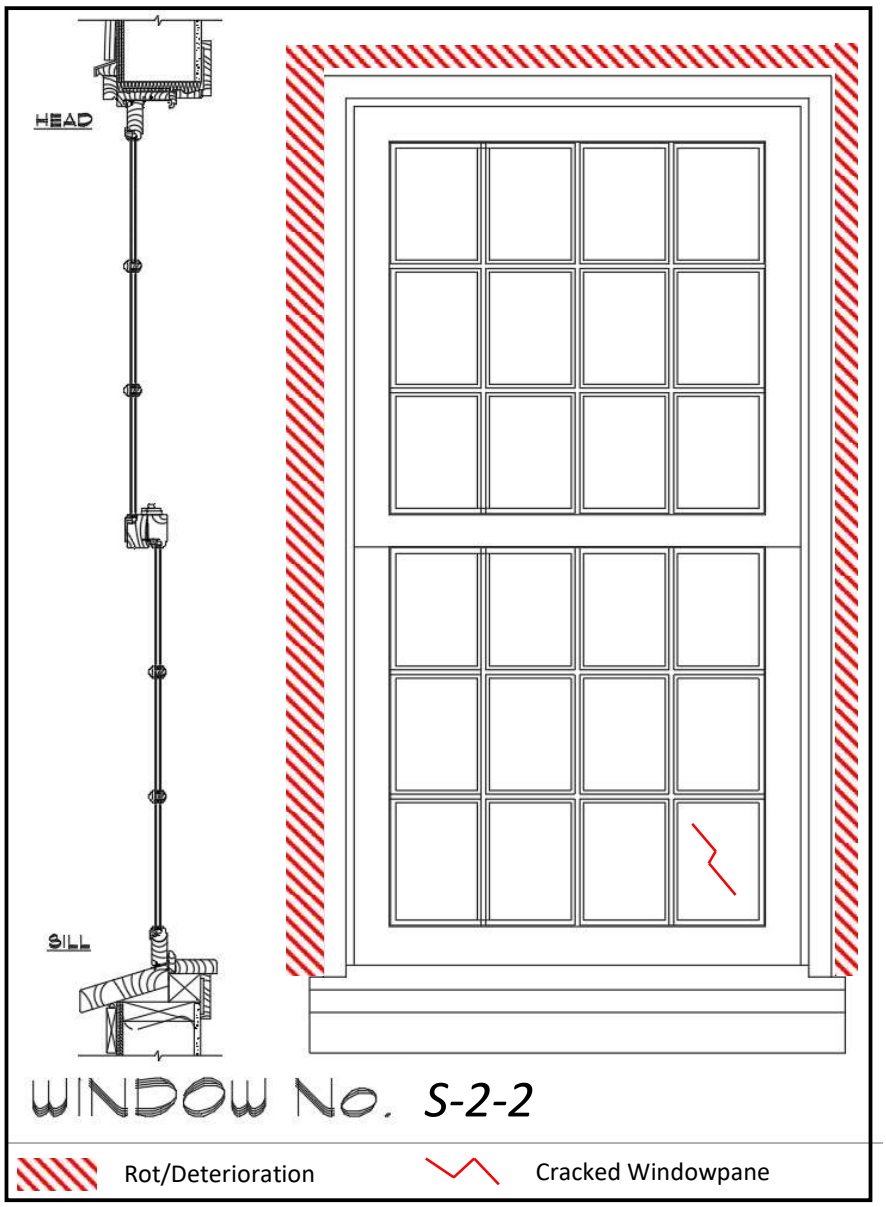
EXHIBIT 'C'

Window S-2-2

This window has issues present mainly throughout the interior face, although the general problems are present at the exterior. The issues present along the interior of the window include:

- Cracked window pane at bottom window.
- Large cracking along the entirety of the window trim due to past water infiltration
- Deterioration of wood throughout interior trim due to past water infiltration
- Peeling of paint throughout entire area due to past water infiltration

The issues present at window S-2-2 would fall under “Repair Class 3”. As the repair needed to fix the entirety of the water damage present will require replacement of some elements. It was mentioned by the attending staff at Boxwood Hall that the window has received partial paint replacement and minor repairs following the water infiltration repairs. Although the large damage remains unrepaired.



Separation and Damage

EXHIBIT 'C'

Window S-2-3

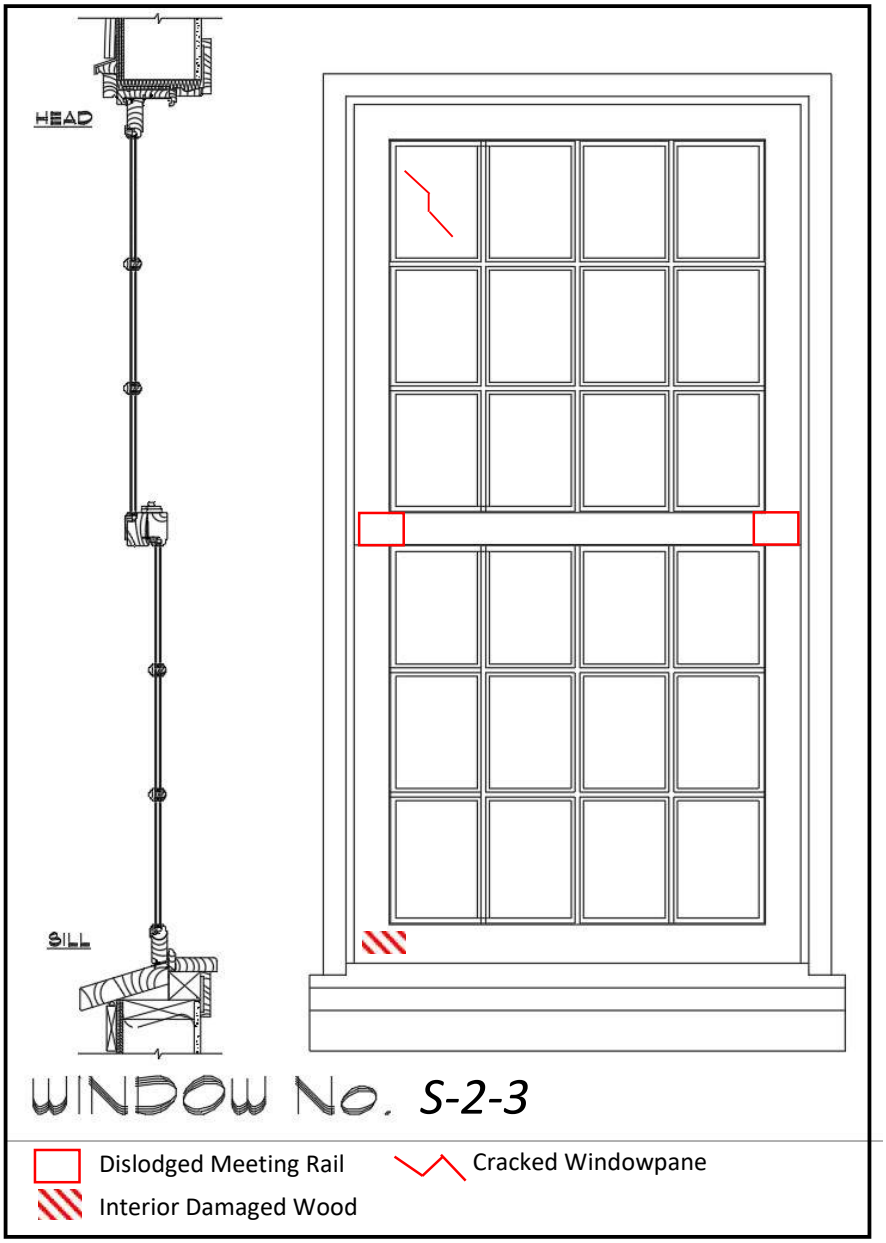
This window has issues present mainly throughout the exterior face. The issues present along the exterior of the window include:

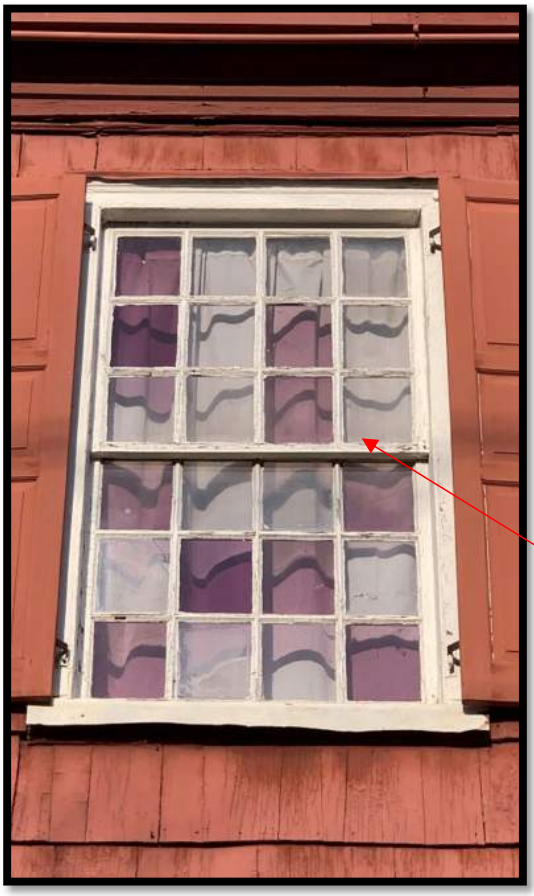
- Cracked window pane at top window
- The meeting rail has been dislodged and will need to be reset

The issues present along the exterior of the window include:

- Slightly damaged/splitting wood at bottom of window

Window S-2-3 is in fairly good condition and would be classified under window repair class 1. The damaged windowpanes require replacement with float glass to match existing under “Repair Class 3”. All general maintenance procedures should be conducted here as well, such as repainting the interior and exterior faces of the window.





Dislodged Meeting Rail

Damaged Interior Wood

EXHIBIT 'C'

Window S-2-4

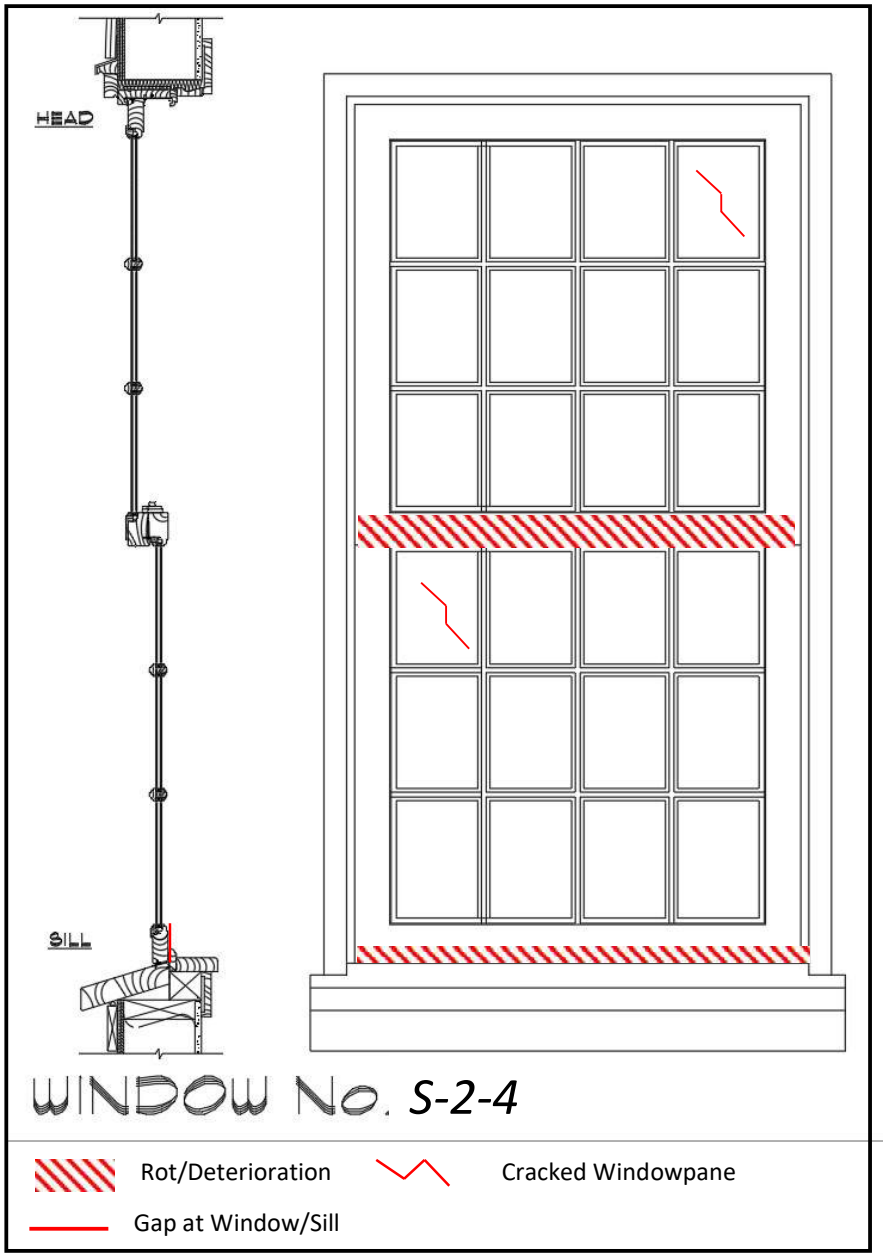
This window has issues present on both the exterior and interior faces. The issues present along the exterior of the building include:

- Deterioration throughout wood face
- Deterioration at Meeting Rail
- Multiple Cracked Windowpanes

Issues present along the interior of the window include:

- Large Gap Forming Between Sill and Window

The exterior of the window is currently showing a large amount of deterioration and rot, although not to the point of being unsalvageable. The window is also showing a large seperation from the interior sill as well. With the proper rehabiliation work, these issues can be repaired utilizing “Repair Class 2”. The cracked windowpanes will need to be replaced entirely utilizing methods detailed under “Repair Class 3”.



Damaged Meeting Rail

Gap Forming at Interior Windowsill

EXHIBIT 'C'

Center Palladian Window

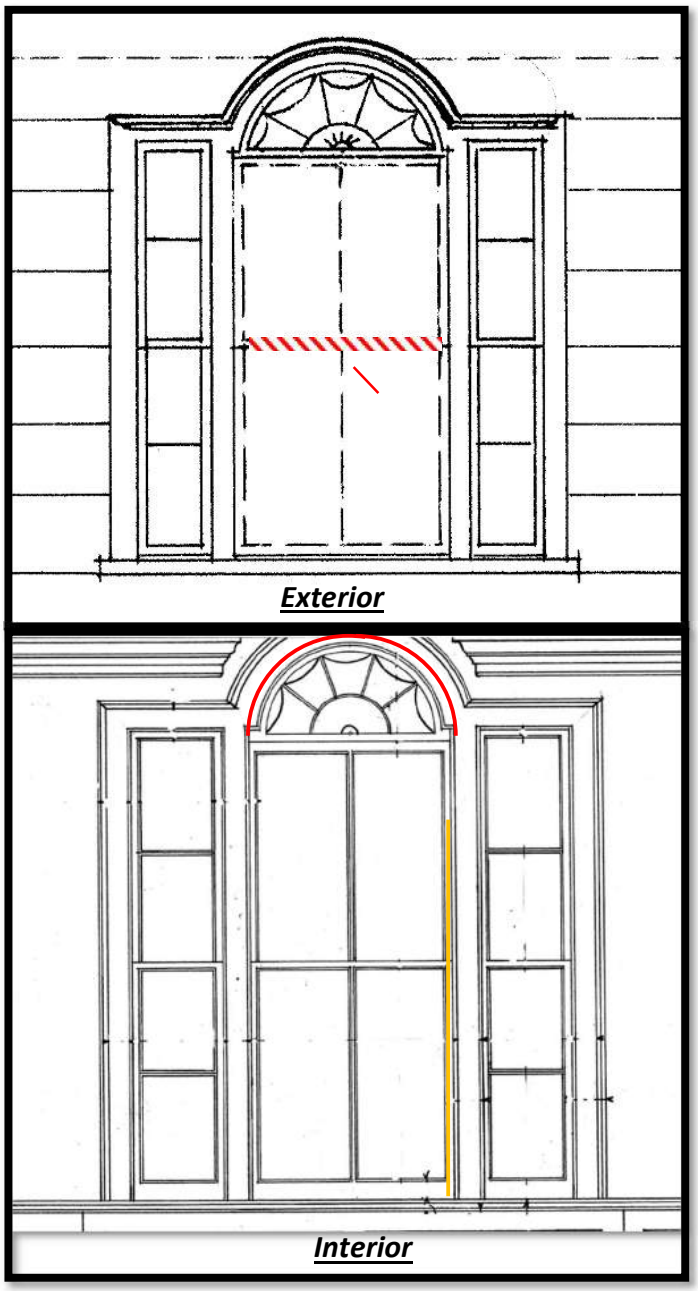
The Palladian style window is present on the Second Floor of the Boxwood Hall Residence. The Window presents itself well as the centerpiece to the corridor, always being seen on the route to the various rooms throughout this floor. The detailed sun ornament at the top of the window has been worn down heavily and the garland surrounding the sun ornament requires repair. The damages present throughout the exterior of the window include:

- Damage present at wooden meeting rail
- Worn down and cracked trim paneling
- Cracked windowpane

The damages present throughout the interior of the window include:

- Gaps forming between trimwork and windowframe
- Damaged sun ornament and garland
- Damaged / cracked trimwork

Overall, the Center Palladian Window is in a good structural state, although if left as is, the gaps will continue to expand and permanently damage the historical materials. The sun ornament atop the window and the damaged and missing garland will require historical restoration, and the damaged windowpanes will require replacement. This window would be covered under "Repair Class 2". The broken windowpane will need to be replaced under "Repair Class 3".



Rot/Deterioration

Cracked Windowpane / Wood

Gap Between Window and Frame

EXHIBIT 'C'

Overview of Exterior

Ornament and Garland

Damaged Meeting Rail

Gap at Window Frame

Overview of Interior

EXHIBIT 'C'

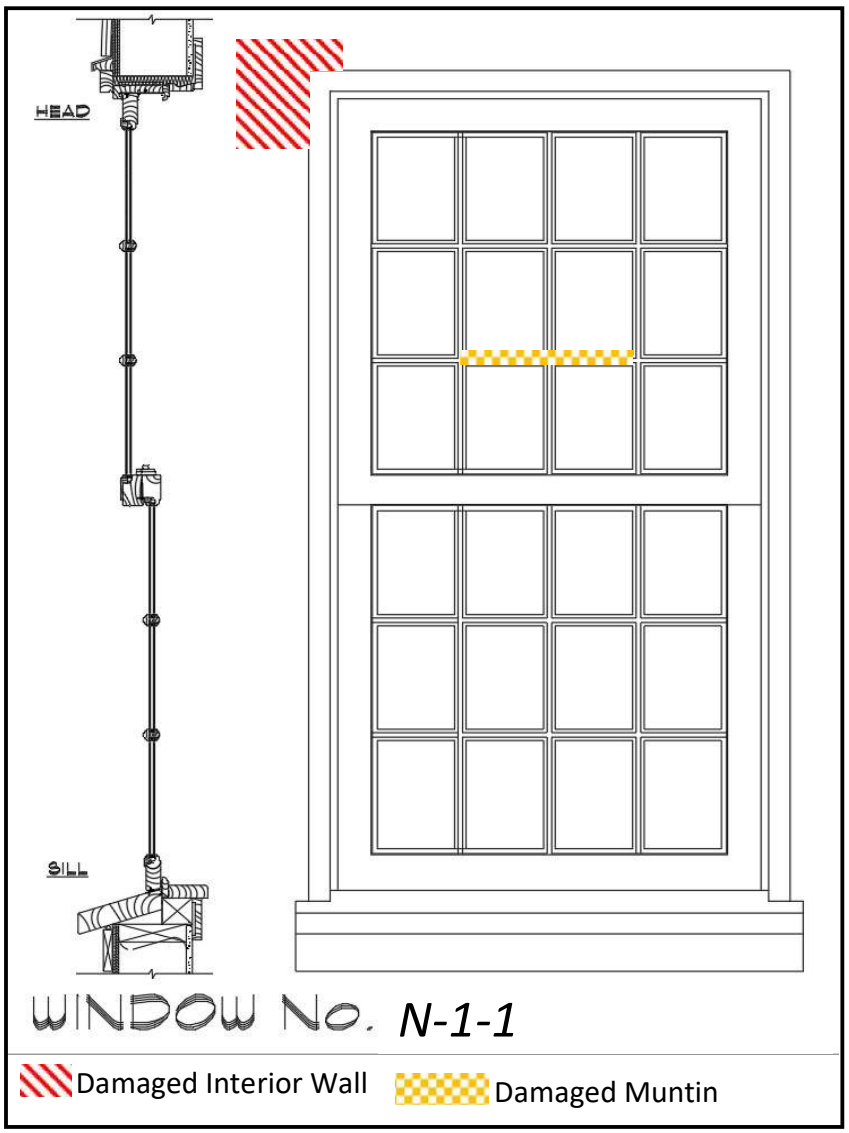
Window N-1-1

It is to be noted that the Windows along the North façade all have the copper flashing consistent with the Upper Level windows along the South Façade.

This window has issues present mainly throughout the interior face. The exterior has very minor issues that would be covered under general maintenance as repairs. The issues present along the interior of the building include:

- Overuse of New Paint at Weight Pockets, Causing Jams
- Wallpaper and interior finish damage due to Water infiltration.
- Rot Beginning at Upper Muntins

The exterior of the window is currently showing a large amount of peeling paint, although not to the point of being unsalvageable. There is currently an alarm installed at this window that is currently unoperational. The various repaintings of this window were not conducted properly as the paint has seized the operation of the weighted jamb system, leaving the entire window inoperable. The damage throughout the interior finish seems to be caused by excessive water infilitration at the corner of the window. With the proper rehabiliation work, these issues can be repaired utilizing “Repair Class 2”. The cracked windowpanes will need to be replaced entirely under “Repair Class 3”.



Damaged Interior Wall

Overpainted Weight Pockets

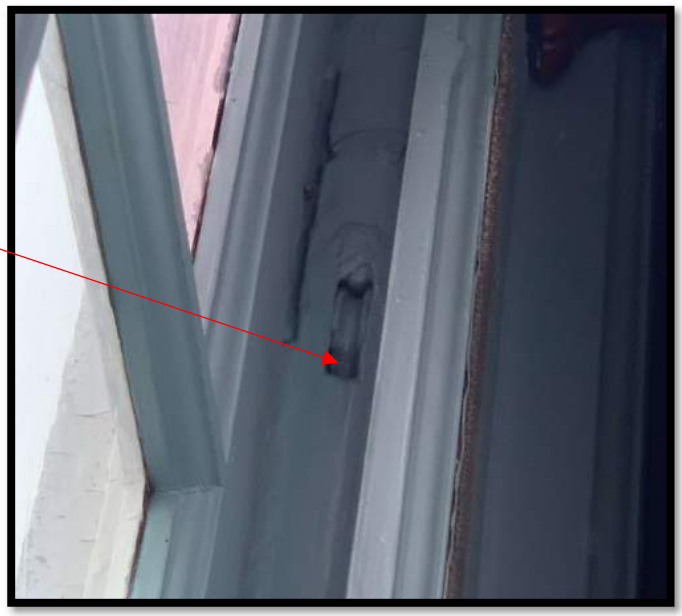


EXHIBIT 'C'

Window N-1-2

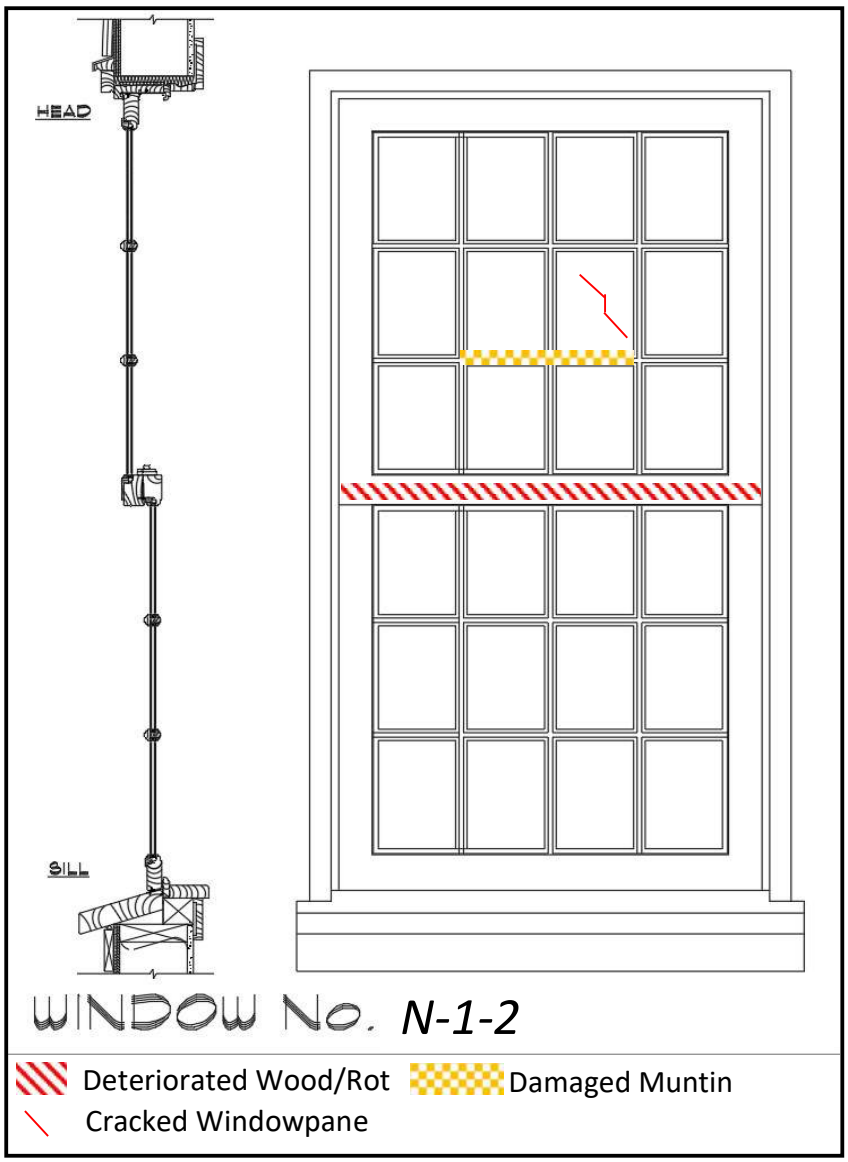
This window has issues present on both the exterior and interior faces. The issues present along the exterior of the building include:

- Deterioration at Meeting Rail
- Rot present in Upper Muntins

Issues present along the interior of the window include:

- Evidence of water damage throughout the interior finishes surrounding the window
- Cracks within Trimwork
- Cracked Windowpane

The exterior of the window is currently showing a large amount of peeling paint, which will lead to the major deterioration of wood throughout the window frame, although not to the point of being unsalvageable. The window is also showing a large seperation from the interior sill as well. With the proper rehabiliation work, these issues can be repaired utilizing "Repair Class 2". The cracked windowpanes will need to be replaced entirely under "Repair Class 3".



Cracking Around Interior Wood Trim

Damaged Meeting Rail

EXHIBIT 'C'

Window N-1-3

This window is stationed at the center of the staircase leading from the First Floor to the Second Floor. This window has issues present mainly throughout the exterior face of the window.

- Destroyed Meeting Rail
- Heavily Rotted Bottom Sill and Stiles
- Rot present in Muntins

The exterior of the window is currently showing a large amount of peeling paint, although not to the point of being unsalvageable. The meeting rail and bottom sill is destroyed and heavily deteriorated to the point of needing replacement. The Interior of this window has been kept and restored to an acceptable condition. It was noted that new wallpaper and painting has been conducted in this area. There is evidence of minor paint peeling throughout the interior of the muntins, as well as two rusted clasps at each end of the windows.

As many of the crucial items throughout this window require replacing, it would be classified under “Repair Class 3”.

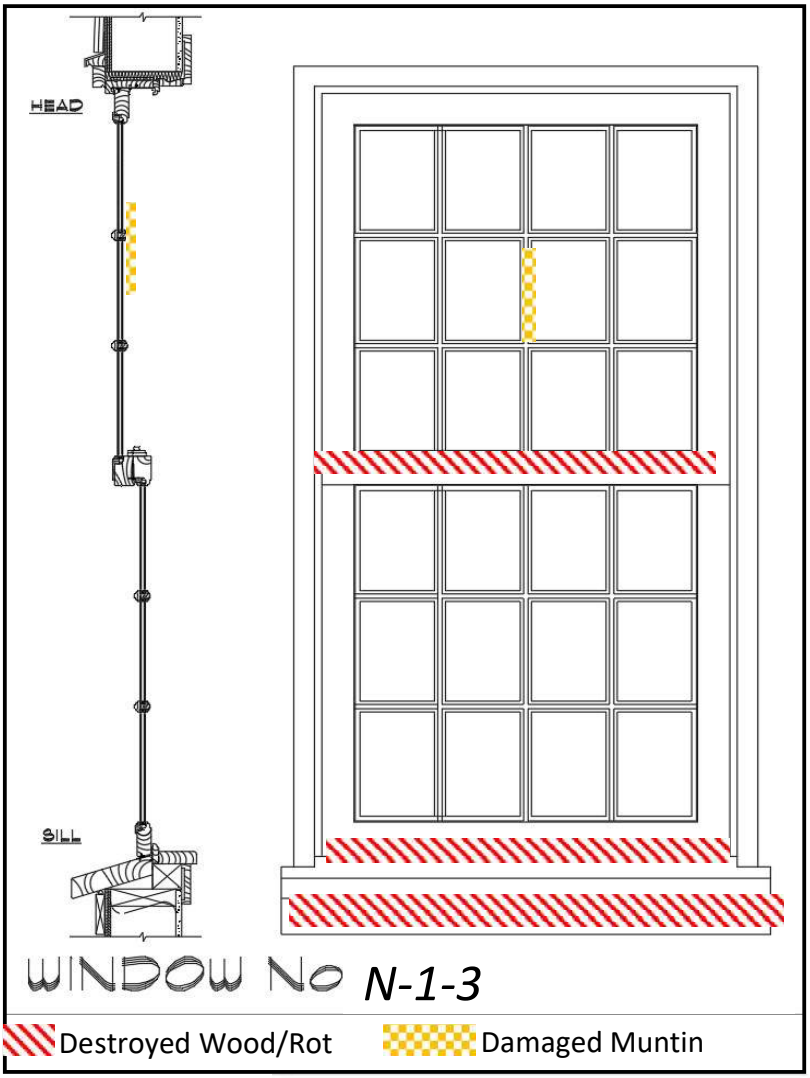


EXHIBIT 'C'

Window N-1-4

This window has issues present on both the exterior and interior faces. The issues present along the exterior of the building include:

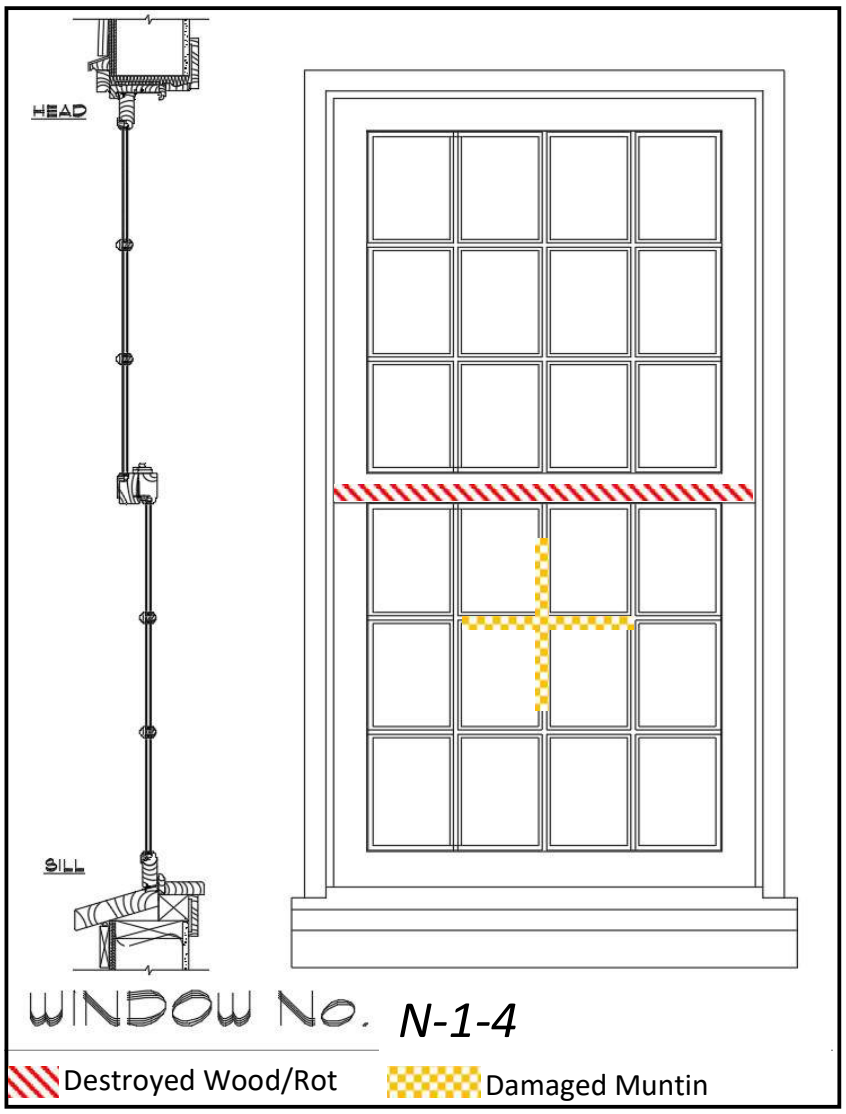
- Destroyed Meeting Rail
- Rot present in Upper Muntins

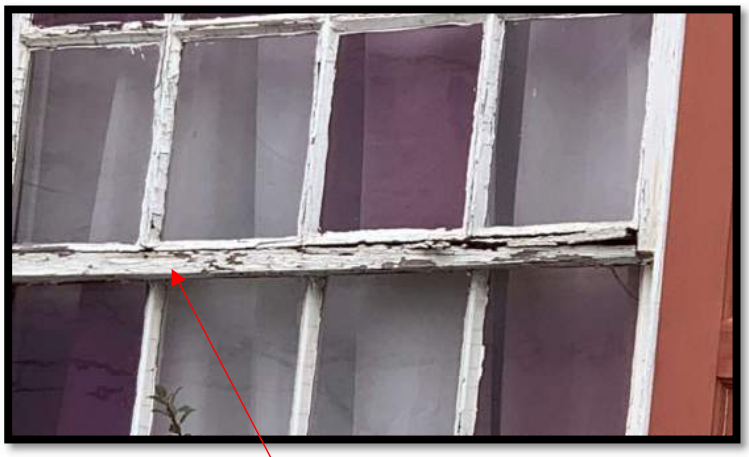
Issues present along the interior of the window include:

- Gaps Forming Between Bottom Sill and Window
- Overuse of New Paint at Weight Pockets, Causing Jams
- Damaged Muntin Joints at Upper Window

The exterior of the window is currently showing a large amount of peeling paint, although not to the point of being unsalvageable. The meeting rail is destroyed to the point of needing replacement. The window is also showing a large seperation from the interior bottom sill as well.

The various repaintings of this window was not conducted properly as the paint has seized the operation of the weighted jamb system, leaving the entire window inoperable. As elements of this window will need to be replaced in their entirety, the issues can be repaired utilizing “Repair Class 3”.





Destroyed Meeting Rail

Damaged Muntin Joint

EXHIBIT 'C'

Window N-1-5

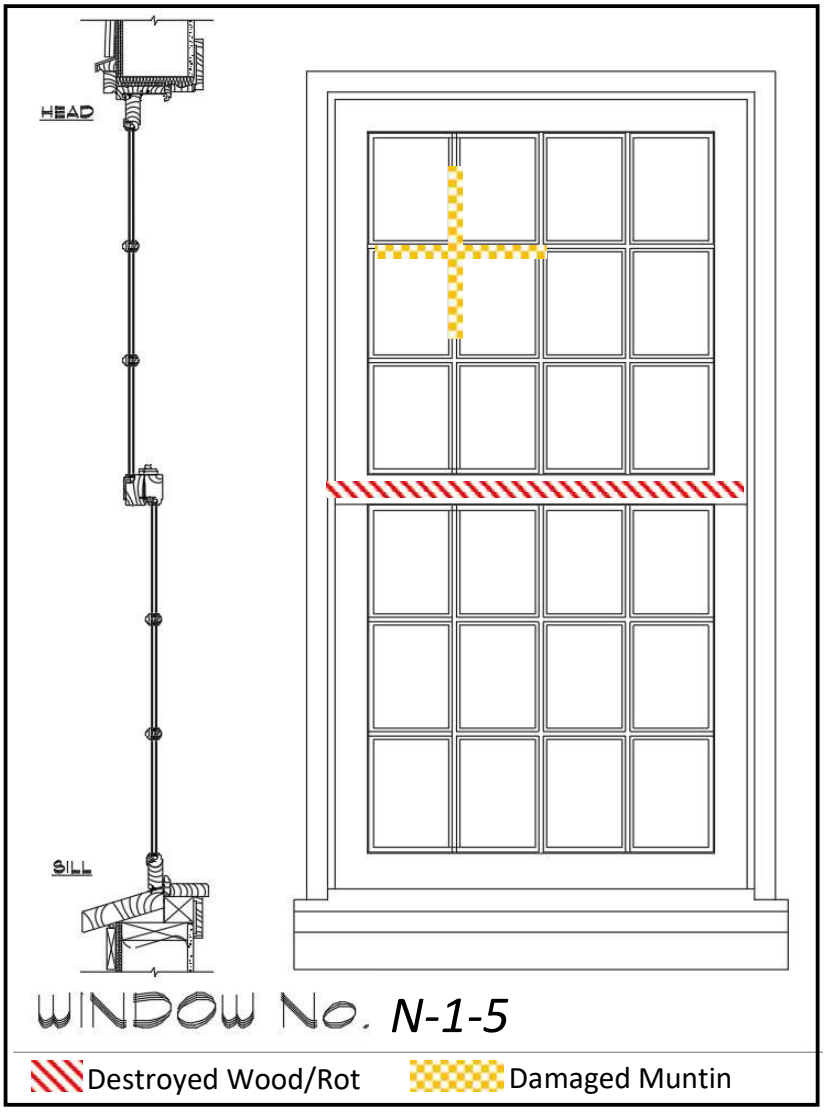
This window has issues present on both the exterior and interior faces. The issues present along the exterior of the building include:

- Destroyed Meeting Rail
- Rot present in Upper Muntins

Issues present along the interior of the window include:

- Support Block Installed Under Failing Meeting Rail
- Missing Bottom Sill Block
- Deteriorated Muntins

The exterior of the window is currently showing a large amount of peeling paint, although not to the point of being unsalvageable. The meeting rail is destroyed to the point of needing replacement, a support block has been installed as a temporary fix.



Over time, a large crack has formed between the window jambs and the interior trimwork. As elements of this window will need to be replaced in their entirety, the issues can be repaired utilizing “Repair Class 3”.

Cracked Interior Jamb/Trim Connection

Damaged Meeting Rail and Support Block

EXHIBIT 'C'

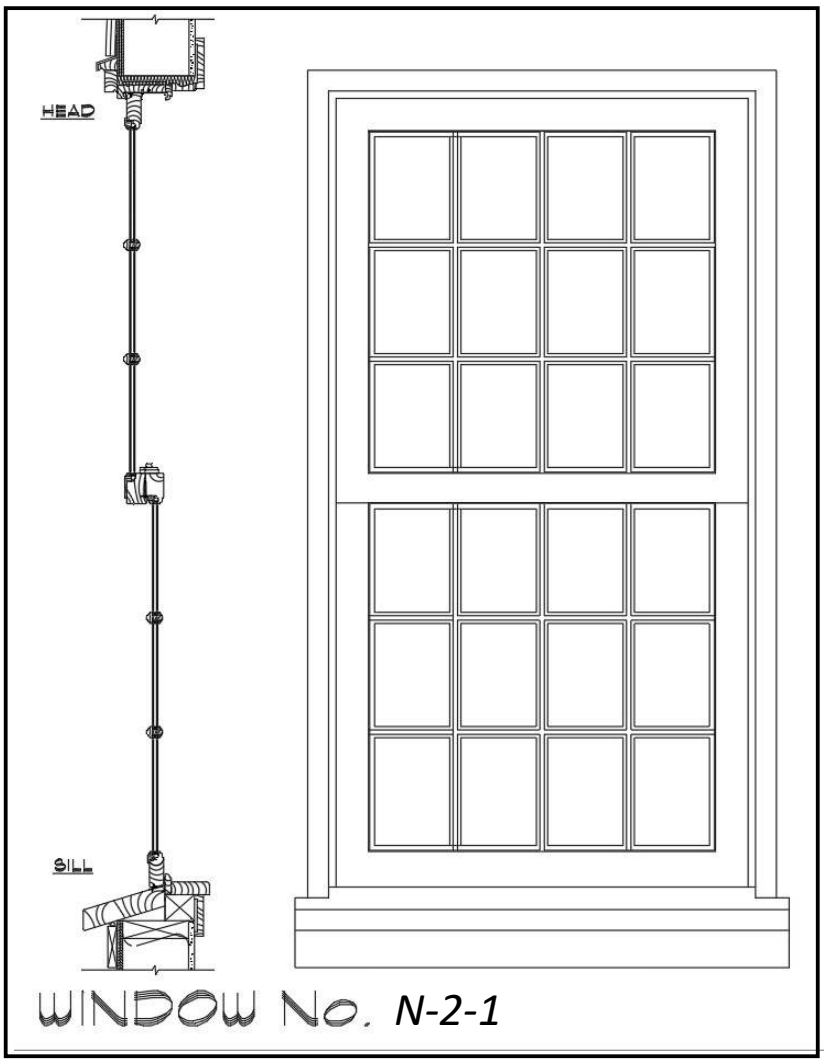
Window N-2-1

This window is equipped with a fire escape platform and ladder, during the installation many of the necessary repairs were made to the window. The small issues present consist mainly throughout the exterior face. The issues present along the exterior of the building include:

- Aggressive Paint Deterioration
- Minor Damage throughout Stiles, Muntins, and Meeting Rail

The exterior of the window is currently showing a large amount of peeling paint, although not to the point of being unsalvageable. Due to the aggressive deterioration of paint, the window has begun to undertake minor damage throughout the wooden structure.

This window is also equipped with an alarm system similar to the first floor window N-1-1. The alarm system is currently not operational. The minor wear throughout this window can be repaired and classified under “Repair Class 1”.



Overview of Escape Platform and Window

Overview of Minor Damage to Exterior Face

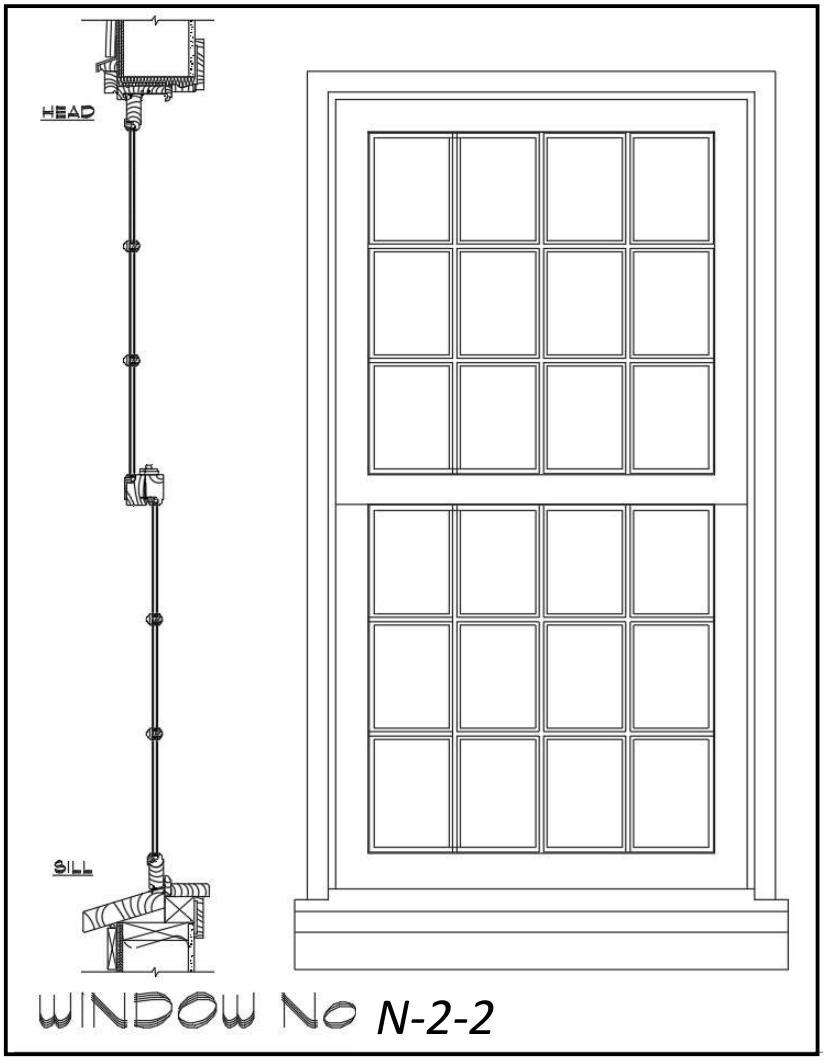
EXHIBIT 'C'

Window N-2-2

This window has no immediate issues that raise concern. The window is showing the general wear and tear present throughout the entirety of the windows at the building. The paint is beginning to peel and the wood underneath is suceptible to deterioration and rot.

The general structure of the window is in good condition. Directly above this window is a platform utilized as an emergency means of egress for the living space in the attic.

General maintenance and repainting classify this window under “Repair Class 1”.



Overview of Emergency Egress Above Window

Overview of Window Exterior

Degradation of Exterior Paint

EXHIBIT 'C'

Window N-2-3

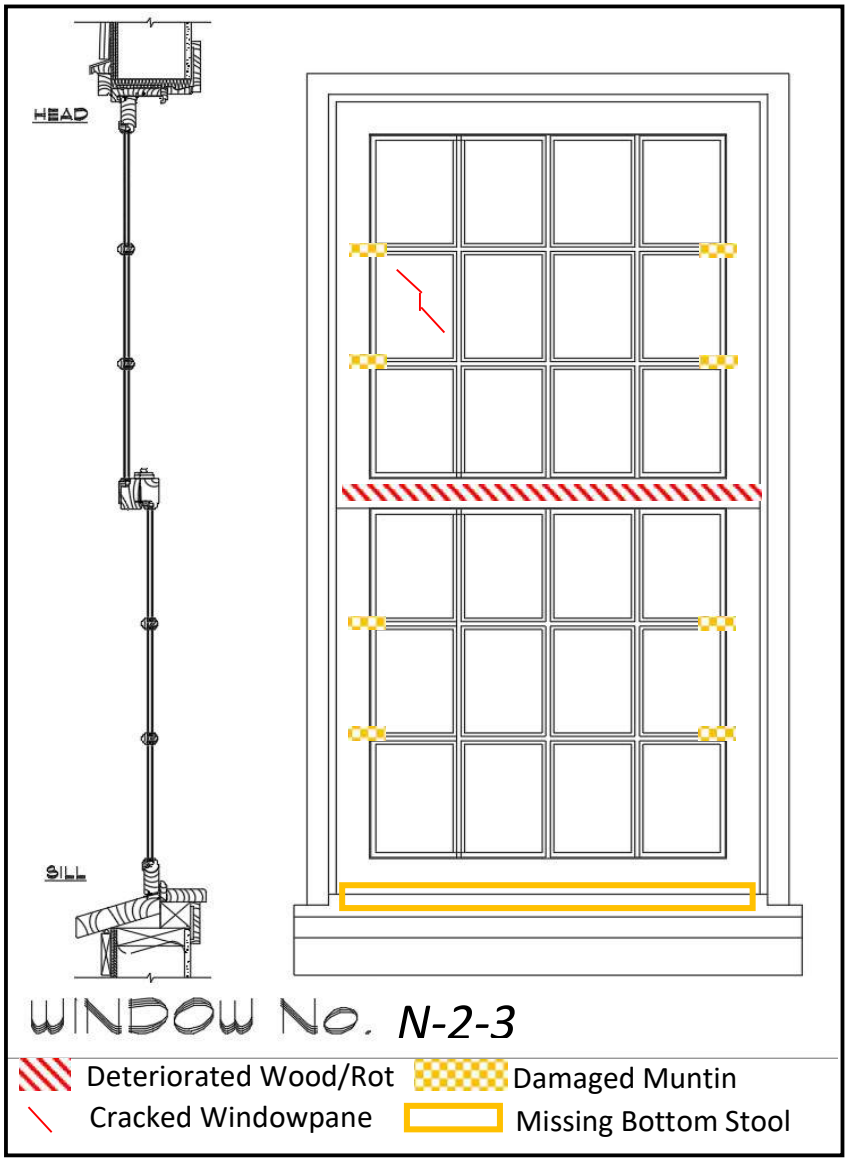
This window has issues present on both the exterior and interior faces. The issues present along the exterior of the building include:

- Deterioration at Meeting Rail
- Aggressive Paint Degradation

Issues present along the interior of the window include:

- Deterioration of wood at Muntins and Stile Connection
- Cracked Windowpane
- Missing Bottom Stool

The exterior of the window is currently showing a large amount of peeling paint, which will lead to the major deterioration of wood throughout the windowframe. although not to the point of being unsalvageable. The interior wood Muntins are showing signs of damage, especially at the meeting location of the muntin and stile. With the proper rehabiliation work, these issues can be repaired utilizing "Repair Class 2". The cracked windowpane will need to be replaced entirely.



Damaged Muntin/Stile Connection

Missing Bottom Stool

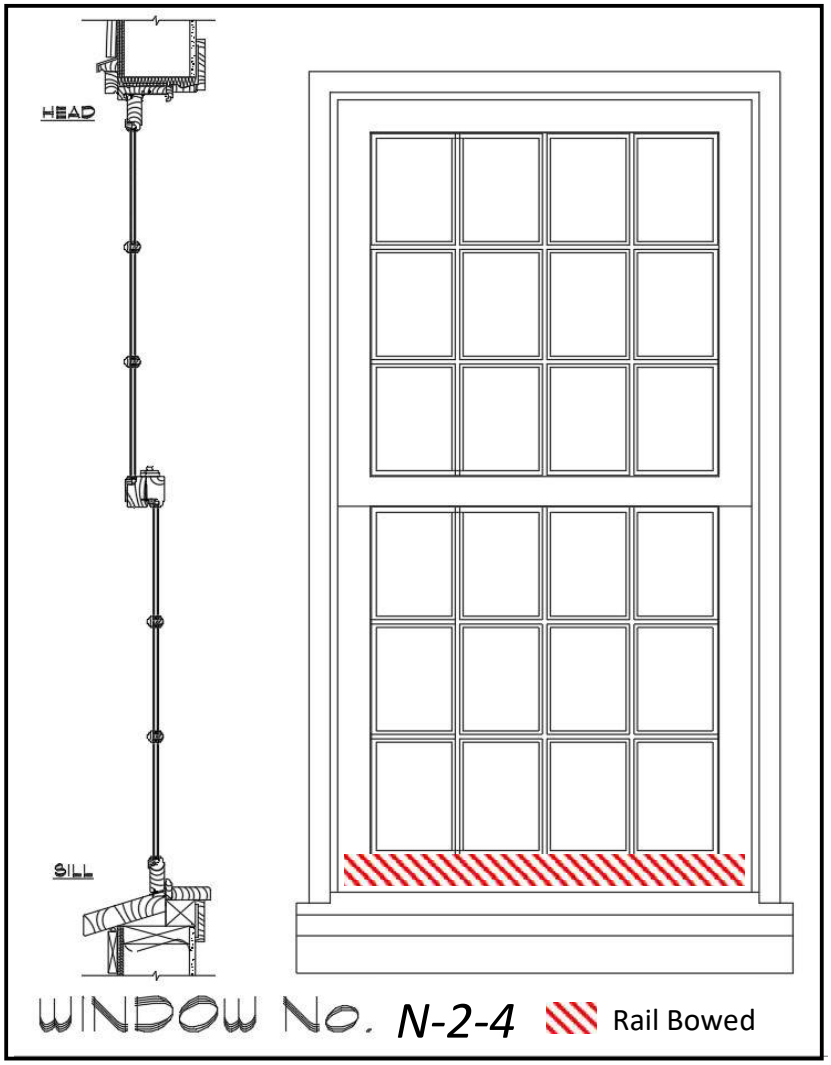
Broken Windowpane and Meeting Rail

EXHIBIT 'C'

Window N-2-4

The window is not showing any signs of wear and has recently been repainted. The general structure of the window is in good condition. The only cause for concern at this window is in regards to the bowing of the lower sash rail of the window itself. The window itself has bowed horizontally approximately 2” from the bottom stool at its worst.

The replacement of the lower sash rail classifies this window under “Repair Class 3”.



Exterior Face of Window

Bowing of Window

EXHIBIT 'C'

Entrance Door Assessment and Recommendations

The entrance door to the Boxwood Hall Residence is currently in an operational condition and many of the components are believed to be original and historic. In addition to the original construction of this entrance door, a new metal frame plastic storm barrier has been installed in front of the exterior ornament at the head of the door as well as a metal framed plastic storm door installed covering the original entrance door.

The original historical components include the iron locking system, interior iron strap hinges, brass door handle, the wood door, frame and sill, and the iron exterior ornament atop the headway of the entrance door.

Repair and Renovation Recommendations:

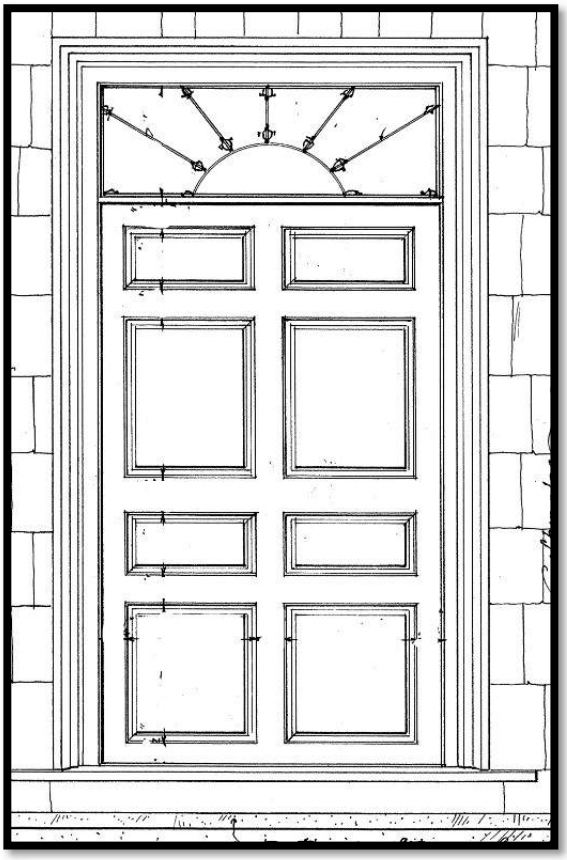
1. The existing iron locking system will need to be refinished and restored utilizing restoration methods consistent with the Secretary of the Interior Standards.

2. The interior iron strap hinges are in very good condition, a cleaning may be performed to enhance the lifetime of the iron and prevent corrosion.

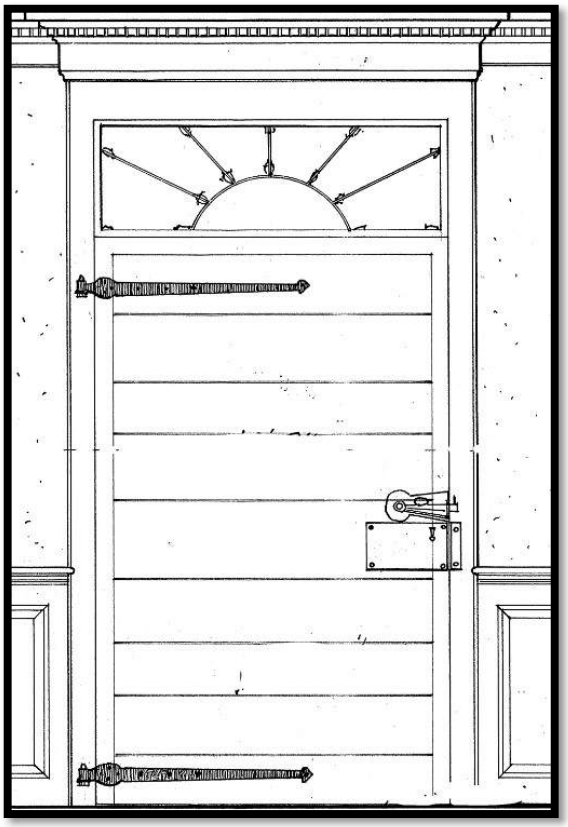
3. The brass door handle that is currently connected to the iron locking system is in good condition. Properly refinishing the brass surface will ensure that corrosion does not occur in the future.

4. The wood door, frame, and sill, have issues consistent with those present throughout the windows. The bottom wood sill has one large crack through the base, although it does not seem any deterioration has taken place. Epoxy consolidation utilizing dutchman repair methods consistent with the Secretary of the Interior Standards will allow for a consistent and durable repair to the historical wood. The remainder of the wood will need to be stripped and repainted to ensure the wood is protected from future damage.

See Photos of Each Bulleted Item On Next Page.



Exterior of Entrance Door



Interior of Entrance Door

EXHIBIT 'C'

Exterior Head Ornament

Iron Locking System

Brass Door Handle

Crack in Bottom Sill

Exterior Doorknob and Peeling Paint

EXHIBIT 'C'

Repair Methods

Repair Class 1:

- Interior and Exterior Paint Removal. The method in which the existing failing paint is removed consists of utilizing a handheld scraping tool or heat gun. Chemical stripping is not recommended, but in some cases necessary as a last resort. If chemicals are to be used, ensure proper manufacturers instructions are followed for removal and neutralization. If the heat gun is to be utilized, ensure that any glass components are protected from sudden temperature changes. As the paint is removed, ensure that the paint within the interior stops and parting beads along the seam where the stops meet the jambs are cleaned thoroughly by running a utility knife along the entire length of the seam to break the paint bond.

- Interior and Exterior Repainting: It is imperative that the proper surface preparation is conducted prior to any paint installation. The proper surface preparation includes thoroughly cleaning and sanding the existing surface area and applying the new primer and paint in conformance with the approved manufacturer's instructions. During new paint application, all existing hardware and hardware accessories are to be removed and reinstalled after completion of new paint installation.

- Removal and Replacement of Glazing Compound: The glazing compound at each glass windowpane is fading, if not completely failed. In order to properly replace and reinstall a new glazing the qualified Contractor is to remove all putty manually, taking care not to damage the wood along the rabbet. If the glass is to be removed, the glazing points which hold the glass in place can be extracted and the panes numbered and removed for cleaning and reuse in the same openings. With the glass panes out, the remaining putty shall be removed. Hardened putty in the rabbets may be softened by heating with a soldering iron at the point of removal. Putty remaining on the glass may be softened by soaking the panes in linseed oil, and then removed with less risk of breaking the glass. Before reinstalling the glass, a bead of glazing compound or linseed oil putty should be laid around the rabbet to cushion and seal the glass. Glazing compound should only be used on wood which has been brushed with linseed oil and primed with an oil-based primer or paint. The pane is then pressed into place and the glazing points are pushed into the wood around the perimeter of the pane.

Repair Class 2:

- Surface Repairs: Cracks and surface deterioration within the windows wood framing, stiles, rails, and muntins are to be handled individually based on the severity of the deterioration. Generally, any minor deterioration, small surface cracks or holes are able to be repaired by simply drying the wood thoroughly, treating effected areas with appropriate fungicides, waterproof with three coatings of boiled linseed oil with approximately 24 hours between applications, and filling any remaining cracks or holes with putty to be sanded flush with the existing wood.

- Consolidation: In areas in which cracks have expanded beyond the possibility of sanding and putty application, an epoxy consolidates, and patching may be utilized. This method should not be utilized in spaces larger than 4 cubic inches to ensure the area is repaired soundly and to maintain the original surface plane and profile.

Repair Class 3:

- Replacement Parts: In areas in which the aforementioned repair methods cannot be utilized, replacement will be needed. As these items are deemed historical, full replacement is only to be utilized as a last resort.

- Dutchman Repairs / Splicing: "Dutchman Repairs" may be utilized in areas in which only about a third of the piece is to be replaced, this is also known as a "splice repair". Where decayed material is to be removed to form a splice repair, the minimum amount of existing material should be removed to allow an effective repair to be formed. Always work new material to the line of the existing and avoid unnecessary trimming of the original material. Repairs should follow any existing deformations in the line of the window. Where possible, spliced repairs should be designed to ensure that moisture is directed towards the outer face of the material and that moisture does not lay on the repair joint. The length of the splice is governed by the section of material and the nature of the component being repaired and it should be designed to ensure an effective bond between the new and existing sections of material. Wherever possible, splice repairs should be formed which include mechanical fixings (e.g. pegs/dowels or nonferrous screws/pins) as well as glue. Screw or pin fixings should ideally be made from the inner face of the window. Well-seasoned timber should be used in forming a repair with the line and density of the grain (number of growth rings) of the new timber matching the existing as closely as possible. As with all joinery work, timber with shakes, fissures, warping, heartwood, sapwood, or numerous/large knots should be avoided for use in repair.

- Replacement of Glazing: Glass glazing panes shall be replaced with handmade float glass or recovered/salvaged glass matching the existing.

Window Damage Overview and Estimates

After individually assessing each window throughout the First and Second Floor of the Boxwood Hall Residence it was evident that the majority of windows can be repaired under “Repair Class 2”, meaning that the majority of repairs will be able to salvage the historical items throughout most of the windows. The table below demonstrates the severity of repairs and the estimated cost of repair/replacement for each window.

Window No./Location	Repair Class 1	Repair Class 2	Repair Class 3
S-1-1		X	X
S-1-2		X	
S-1-3		X	
S-1-4		X	
S-2-1		X	
S-2-2			X
S-2-3	X		
S-2-4		X	
S-2-5		X	
N-1-1		X	
N-1-2		X	
N-1-3			X
N-1-4			X
N-1-5			X
N-2-1	X		
N-2-2	X		
N-2-3		X	
N-2-4	X		
Entrance Door		X	X

As most of the damaged observed is consistent throughout the majority of windows, the issues were tallied and broken down into one overall Construction Cost Estimate (See Appendix “C”) to repair all of the windows at the Historic Boxwood Hall Residence.

Hazardous Materials

The window glazing compound and the window paint had been sampled during RASA, LLC.’s site visits and sent to EMSL testing labs for hazardous materials analysis. The results showed that both sampled materials tested positive for hazardous materials (See Appendix “D”). While this was expected, it is to be noted that when conducting repairs or removal of these hazardous materials the proper abatement methods be taken to ensure the safety of the inhabitants and construction personnel.

When construction and repairs begin, the Contractor should be required to submit a hazardous material removal safety plan, including site specific information and disposal methods and locations.

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APPENDIX “A”

Structural Conditions Assessment and Recommendations

EXHIBIT 'C'

5-Hole Structural Engineering

May 14, 2021

Richard Lees
Vice President
Ronald A. Sebring Associates, LLC
2156 Route 37 West, Suite 201
Manchester, NJ 08759

Regarding: **Structural Condition Assessment Report**
Boxwood Hall Foundation Walls
1073 East Jersey Street
Elizabeth, New Jersey
Project Number 20004.00

Dear Rich:

As requested, the undersigned visited the referenced site to perform a walkabout structural condition assessment survey of the basement foundation walls at the building. The purpose of the condition assessment survey was to gather information to address concerns with the displacement of several stones of the basement foundation wall in the southwest building corner. If I may reiterate, the concerns involved cracking of the mortar joints between stones, two-directional displacement of stones, and the opening of the joint between the outer brownstone and the backup fieldstone.

Photograph 1

3 Quail Run, South Burlington, Vermont 05403
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802-338-0233

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To assist us in performing our review and assessment, we were provided with an electronic copy of a portion of the Historic American Building Survey Plans for the referenced building, dated March 1, 1939, and a copy of the Architectural Contract Drawings for the Roof Replacement to the referenced building, dated December 2, 2016 and prepared by your office. The survey was limited to visual observation of existing conditions from grade and observations from the interior of the structure. To further assist with the assessment of the basement foundation wall, Richard Grubb and Associates, Inc. performed an archeological survey involving excavation of a 2'6" deep by 3 foot wide by 4 foot long (across the south building face at the corner) hole at the exterior side of the basement foundation wall to allow visible observation of the wall condition below grade. No other destructive investigation or exploratory work was performed as part of this assessment.

The existing building is a two-story wood framed gable roof structure with a basement (Photograph 1). The ridge of the gable roof runs from the east wall to west wall of the building. The roof construction replaced in 2016 consists of cedar shakes on furring strips nailed to tongue and groove board sheathing. The sheathing is supported by wood rafters that span from the eaves to the ridge. At both the north and south sides of the building is a full-length built-in gutter.

The exterior walls consist of balloon-framed wood studs supporting the second floor and the attic floor. The wood studs of the exterior wall support the plaster wall finish on the interior and the board sheathing and shingles on the exterior. The wall shingles terminate atop the stone wall with a wood watertable (Photograph 2). The studs sit on a heavy timber plate atop the basement foundation wall. The basement wall is approximately 18 inches thick above grade and widens to approximately 22 inches thick below grade creating an exterior shelf (Photograph 3). The above grade portion of the wall has a range coursed brownstone exterior with uncoursed fieldstone back-up.

Photograph 2

Photograph 3

The below grade portion is all uncoursed fieldstone. There is no mechanical or stone tie between the brownstone and the fieldstone back-up. The back of the fieldstone wall was likely covered with a parge coat to create a uniform surface or the joint between the two was filled with mortar. The coating or the mortar likely disintegrated over time.

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A leader connects through the soffit to the built-in gutter and at the opposite end to an exterior downspout. The downspout terminates at a vertical terra cotta pipe at grade that extended below the level of excavation bottom exposed by Richard Grubb and Associates. We expect the terra cotta pipe connects to the city storm water drainage system.

The exterior brownstone in the southwest building corner have displaced outward in both the south and west direction. The stones appear to have settled in addition to the outward displacement (Photograph 4).

Photograph 4

Large gaps have formed between the brownstone and the exterior brownstone have separated from the fieldstone backup (Photograph 5).

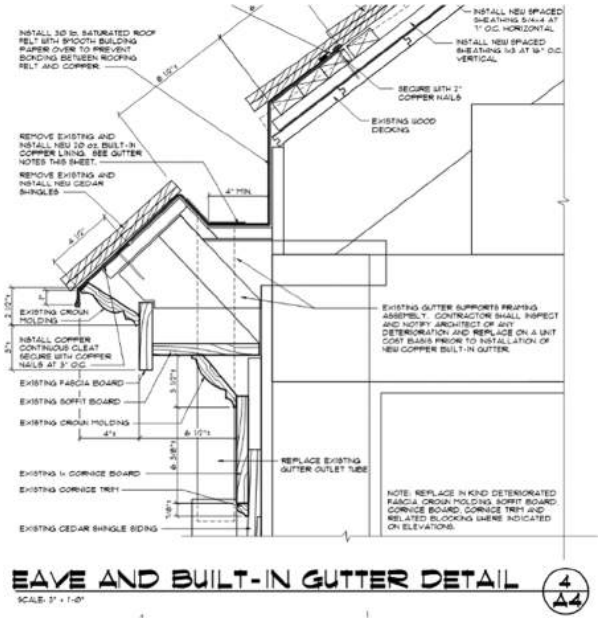
Photograph 5

The excavation performed by Richard Grubb and Associates personnel exposed the shelf and the below grade portion of the fieldstone basement wall. The fieldstone basement wall below grade was found to be in stable condition and not exhibiting any settlement, lateral displacement, or cracking. Furthermore, the fieldstone basement wall at the interior side of the wall in the southwest corner was in good condition and not exhibiting any signs of settlement, displacement, or cracking and the mortar joints between the fieldstone were intact. With the exterior brownstone separating from the fieldstone back-up, it appears that the fieldstone portion of the basement wall is sound and stable.

Since the fieldstone wall portion is stable and not experiencing any movement, the cause of movement in the brownstone results from an imposed forced between the fieldstone and the brownstone. This force was generated by the expansion of trapped infiltrated water in the joint between the fieldstone and the brownstone, Water expands when frozen. As the gap opened more water was trapped and subsequently froze and expanded moving the stones further. The settlement and rotation of the stones is due to the lower elevation of the top of the fieldstone shelf relative to the bottom of the brownstone that moved. The mortar joints provide $^{3}/_{8}$ inch to ¾ inch

EXHIBIT 'C'

gap between the bottom of the brownstone and the top of the shelf. This differential, when the brownstone was pushed outward, caused the outer edge to drop and the section of wall to rotate.



The likely source of the water appears to be the built-in gutter at the roof. Evidence depicts extensive amounts of water penetrating the south wall at the roof level due to the damage of the second-floor interior wall finishes and the rotted wood wall plate atop the stone wall and the wood siding near the base of the wall. The water likely infiltrated the soffit at the leader connection (Eave and Built-in Gutter Detail prepared by Ronald A. Sebring Associates, LLC Architectural Contract Drawings for the Roof Replacement for Boxwood Hall, dated December 2, 2016), penetrated the wall cavity between the balloon studs and then progressed down the wall to the sill. Unable to exit the wall at the plate, the water migrated to the joint between the fieldstone and the brownstone.

We observed the onset of similar damage to the base of the stud wall and displacement of brownstone and mortar joint deterioration in the southeast building corner (Photograph 6) and in the northeast building corner (Photograph 7).

Southeast Building Corner
Photograph 6

Northeast Building Corner
Photograph 7

The rebuilt gutters and new roofing should arrest the water infiltration problem from above but with the open brownstone wall rainwater can penetrate and continue to cause movement in the stones. We recommend that a portion of the exterior brownstone at the southwest building corner be rebuilt. The work should be performed by a stone mason with demonstrated expertise in historic masonry. The existing brownstone are to be removed and cataloged with wall locations and reinstalled with mechanical ties anchored into the fieldstone back-up. The stones are to be set

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in full-bedded lime-rich mortar with lime-rich mortar head joints. Once each course is set, the gap between the fieldstone back-up and the reinstalled brownstone must be filled with a hydraulic lime grout (1 part lime to 2.5 parts sand). At the time of this survey, the extent of the brownstone reinstallation work appears to involve approximately 3 feet across the south façade from the corner and to the first south window jamb on the west wall.

The corner sections of the brownstone at the southeast and northeast building corners although displaced appear to be intact. I would recommend raking the joints clean and repointing with a lime-rich mortar. In doing this work a few stones may need to be reset. But this work should stabilize the walls and prevent further water infiltration in those locations.

The rotted portion of the wall plate and rotted potions at the bottoms of any wall studs are to be removed and replaced. The new section of wall plate is to be ship lapped spliced with the existing wall plate portion remaining. Where stud ends must be replaced, we recommend cutting the stud end square above the deteriorated portion and installing two lap splices, one each side of the existing stud. The lap splice members should be 2x framing. Rotted damaged portions of the sheathing should also be replaced. We recommend exposing a 4-foot section of the wall plate and sheathing on the south façade from the corner and to the window jamb on the west façade to verify the full extent of deteriorated area. We recommend probing the wall plates, bottom of the wall studs and the sheathing in the southeast and northeast building corners to verify the absence of wood rot in those members. Otherwise, the repairs stipulated herein must be performed in those locations.

While at the site, we observed significant damage to the brownstone walls in other locations. The mortar joints are deteriorating, stones are eroding at the mortar joints, and the exterior surface of the stones on the lower courses of the east face are eroding.

Many of the mortar joints are filled with a cementitious based mortar, which is harder than the brownstone. The harder mortar does not allow the movement of wind driven rain moisture that penetrates the exterior stones to leave the wall through the mortar joints. Thus, this moisture exits the wall at the interface of the mortar and the stone causing erosion of the stone surface contacting the mortar. As this gap grows more moisture passes through the opening and more stone is eroded until the mortar has no bonding connection. All mortar joints on the building should be raked clean to a depth of 2.5 times the joint thickness and repointed with a lime-rich mortar in ¼ inch thick layers. We recommend recessing the final mortar slightly from the face of the brownstone.

The brownstone along the east facade at or near grade is damaged and deteriorated in many locations (Photographs 8 and 9). This deterioration is consistent with frequent use of de-icing salts and snow removal at the driveway. We recommend replacing missing stones with brownstone that matches in color and texture and the mortar joints repaired as stipulated herein. We recommend cleaning the lower 4 feet of the east façade with water and/or alkaline chemical cleaner (acid-based cleaners are prohibited). Going forward the use of de-icing salts on the driveway along the east façade should be prohibited or a barrier, such as sheets of clear plexiglass, shall be placed along the wall to a height of 4 feet to protect the brownstone.

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Photograph 8

Photograph 9

The findings in this report are based upon information available to us at the time of our assessment review. We reserve the right to, update, add or delete any information contained herein once our review and analysis of any new information is complete.

Thank you for the opportunity to perform this assessment. If you have any comments or questions, please do not hesitate to contact our office.

Sincerely,

Thomas J. Langan, P.E.

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3 Quail Run, South Burlington, Vermont 05403
Structural5-hole@hotmail.com

EXHIBIT 'C'

APPENDIX “B”

Archeological Survey

EXHIBIT 'C'

ARCHAEOLOGICAL SURVEY

BOXWOOD HALL

1073 East Jersey Street, City of Elizabeth, Union County, New Jersey

PREPARED FOR:

New Jersey Department of Environmental Protection
4265 Atlantic Avenue
Farmingdale, New Jersey 07727

May 2021

RGA
RICHARD GRUBB & ASSOCIATES

EXHIBIT 'C'

ARCHAEOLOGICAL SURVEY

BOXWOOD HALL

1073 East Jersey Street, City of Elizabeth,
Union County, New Jersey

Principal Investigator:
Nicole M. Herzog, M.A., RPA

Authors:
Nicole M. Herzog
Jason Shellenhamer

Prepared by:
Richard Grubb & Associates, Inc.
259 Prospect Plains Road, Building D
Cranbury, New Jersey 08512

Prepared for:
New Jersey Department of Environmental Protection
4265 Atlantic Avenue
Farmingdale, New Jersey 07727

Date:
May 14, 2021

EXHIBIT 'C'

EXECUTIVE SUMMARY

Richard Grubb & Associates, Inc. (RGA) completed an archaeological survey at Boxwood Hall in the City of Elizabeth, Union County, New Jersey. The State Parks Service, a division of the New Jersey Department of Environmental Protection (NJDEP), required a structural engineer to assess structural issues associated with the foundation of Boxwood Hall. The structural assessment required the removal of soil in advance to expose the exterior of the foundation for the structural engineer. The project location is confined to a 12-square-foot excavation unit (EU) at the southwest corner of the Boxwood Hall building located at 1073 East Jersey Street (Block 9, Lot 391), in the City of Elizabeth, Union County. The Boxwood Hall property is a National Historic Landmark (NHL: 11/28/1972) and is listed in the National and State Registers of Historic Places (NR: 12/18/1970; SR 5/27/1971). The project is sponsored by the State of New Jersey thus requiring compliance with the New Jersey Register of Historic Places Act (NJAC 7:4). The archaeological survey was completed to identify potentially significant pre-Contact or historic period archaeological resources that may contribute to the significance of Boxwood Hall and to make recommendations for further survey, if warranted.

Boxwood Hall, also known as the Elias Boudinot House, is a five-bay, middle-Georgian wooden structure with a tripartite Palladian window. In its original configuration, the house had two lateral wings bringing the number of rooms to 18. Boxwood Hall was built circa 1750 by Samuel Woodruff, the Mayor of Elizabethtown. Elias Boudinot lived at the house from 1772 to 1795. Boudinot was a member of the Continental Congress and served as the President of Congress in 1782-1783. A review of historic maps, aerial photographs, and secondary source histories of the Boxwood Hall property documented episodes of significant but localized ground disturbance associated with the construction of the Boxwood Hall dwelling and outbuildings in the mid-eighteenth century, as well as subsequent alterations made to the buildings and/or property including: the demolition of the original lateral wings and addition of a rear wing around 1870; the removal of the rear wing during restoration in 1942; and the installation and removal of an oil storage tank from the front yard. However, the project location appeared to be minimally impacted by these documented disturbances during the current pedestrian reconnaissance.

A single three-foot by four-foot EU was excavated, resulting in the identification of two deposited fills, and two features associated with recent landscaping and a rainwater drainage system. A total of 196 historic period artifacts was recovered during testing. The recovered artifacts suggest that the uppermost fill represents disturbed topsoil associated with twentieth-century use of the property. The underlying fill contained ceramics with manufacturing dates spanning the seventeenth to eighteenth century alongside wire nails that typically date after 1879, suggesting that the underlying fill may represent earlier redeposited soil or a previously intact eighteenth-century deposit subsequently disturbed during the nineteenth century. No intact archaeological deposits or cultural features were identified as part of the archaeological survey. However, there remains high potential for significant historic period archaeological resources associated with the period of significance of Boxwood Hall elsewhere on the property or underlying the excavated two feet below ground surface in the EU. Consequently, additional archaeological testing in the form of EUs is recommended prior to the implementation of a foundation repair program where excavation on the exterior of Boxwood Hall is required. The Boxwood Hall site (28-Un-56) was identified and registered with the New Jersey State Museum as a result of this archaeological survey.

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EXHIBIT 'C'

1.0 INTRODUCTION

Richard Grubb & Associates, Inc. (RGA) completed an archaeological survey in advance of a structural assessment of the Boxwood Hall building foundation located on Block 9, Lot 391 at 1073 East Jersey Street, in the City of Elizabeth, Union County, New Jersey (Figures 1.1 and 1.2). The archaeological survey was completed to identify potentially significant archaeological resources that may contribute to the significance of Boxwood Hall within the project location, which included 12 square feet of ground disturbance.

Nicole Herzog, M.A., RPA served as the Principal Investigator for archaeology and meets the Secretary of the Interior's Professional Qualifications and Standards for Archaeology and Architectural History (36 CFR Part 61) set forth by the National Park Service (Appendix A). Fieldwork was conducted by Nicole Herzog (crew chief), Jonathan Dernbach, and Edward McFadden. Laboratory processing was carried out under the supervision of Tara Erdreich, Laboratory Director. Allison Butchko cataloged the artifacts. Jason Shellenhamer, M.A.A., RPA, served as the project manager and co-authored the report along with Ms. Herzog. Allison Gall conducted the background research and Patricia McEachen produced report graphics. Richard C. Grubb served as report editor and Catherine Smyrski served as technical editor. Copies of this report and all field notes, photographs, and project maps are on file at the RGA offices in Cranbury, New Jersey.

1.1 Regulatory Context

Since the publicly funded project takes place on land owned by the State of New Jersey and the undertaking has the potential to "encroach upon, damage, or destroy" a historic property listed in the New Jersey Register of Historic Places (NJR), the proposed project falls under the New Jersey Register of Historic Places Act (NJAC 7:4). Therefore, an archaeological survey was required for review by the New Jersey Historic Preservation Office (NJHPO). This archaeological survey meets the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (1983) and complies with the archaeological survey and reporting guidelines of the NJHPO set forth in N.J.A.C. 7:4-8.4 through 8.5 (Requirements for Phase I archaeological survey and Archaeological Reports – Standards for Report Sufficiency) (NJHPO 1994, 1996, 2003).

1.2 Project Description

The State Parks Service, a division of the New Jersey Department of Environmental of Environmental Protection, required the removal of soil to expose the foundation of Boxwood Hall in advance of examination of the foundation by a structural engineer. This work was confined to an approximately 12-square-foot area along the south face (front) of the building, which extends four feet east and three feet south of the southwest corner of Boxwood Hall and was excavated to a depth of two feet below grade as determined by the structural engineer. Boxwood Hall is located in the densely settled center of the City of Elizabeth at 1073 East Jersey Street. The building lies along the north side of East Jersey Street between Catherine Street and Madison Avenue (see Figures 1.1 and 1.2).

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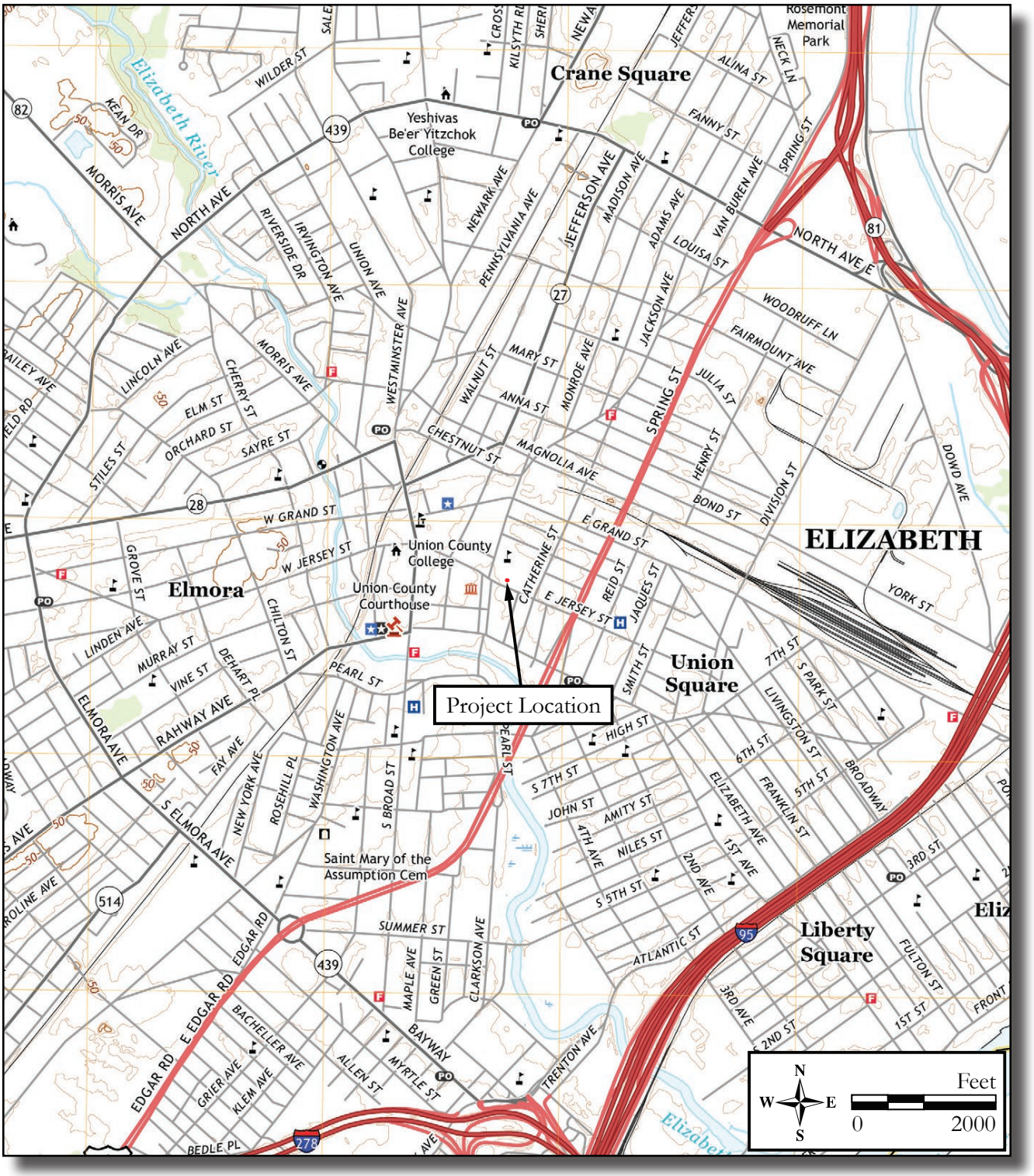

Figure 1.1: U.S.G.S. map
(2019 U.S.G.S. 7.5' Quadrangle: Elizabeth, NJ).

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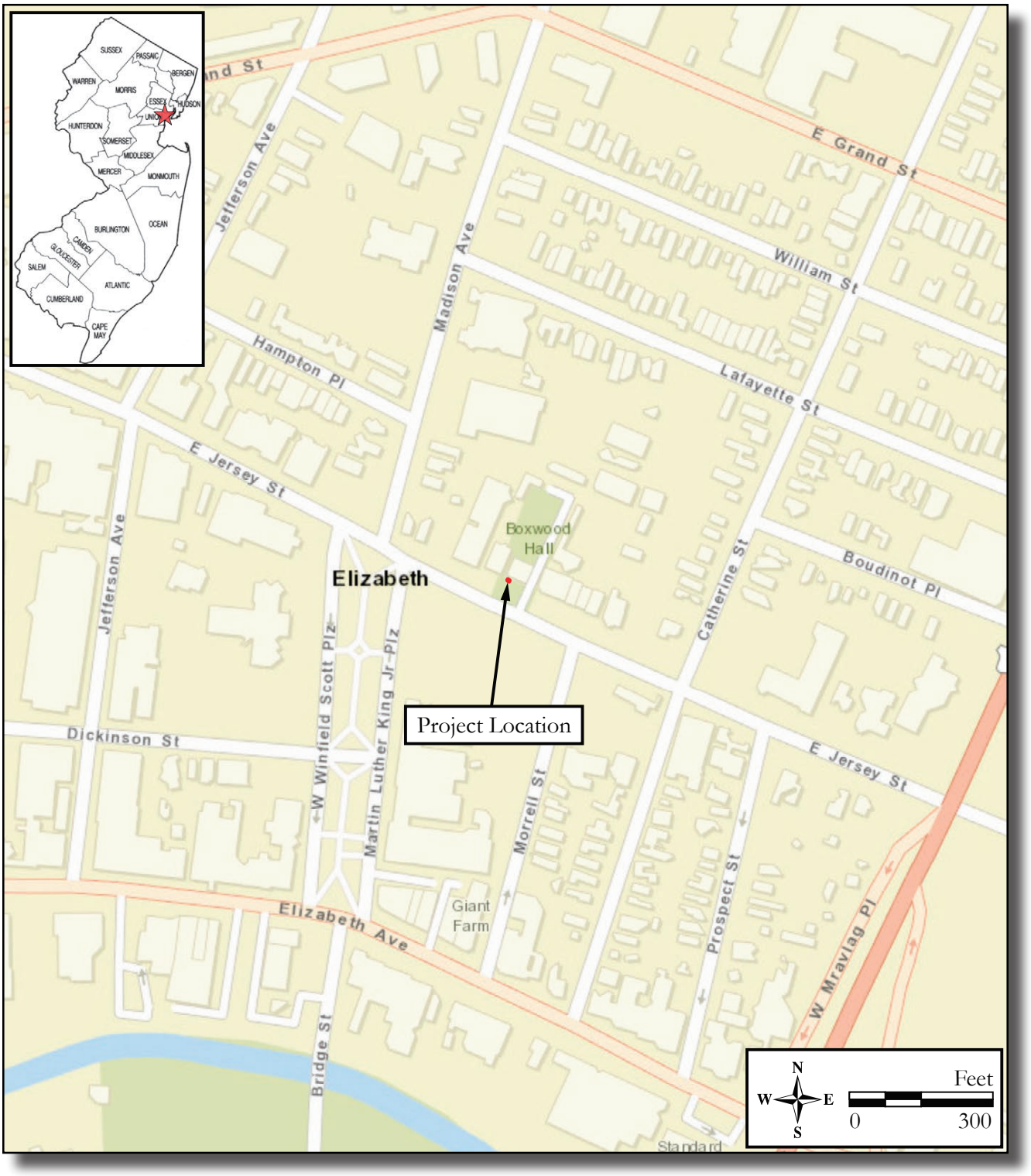

Figure 1.2: Road map
(World Street Map, ESRI 2018).

EXHIBIT 'C'

2.0 PROJECT APPROACH

The goals of the archaeological survey were to assess the archaeological sensitivity of the project location and to identify the presence or absence of potentially significant pre-Contact Native American and/or historic archaeological resources within the project location. Determinations of significance are based on the National Register of Historic Places (NRHP) Criteria for Evaluation (Appendix B). The archaeological survey methods included background research, site reconnaissance, subsurface testing, artifact analysis, completion of a New Jersey State Museum (NJSM) archaeological site registration form for the newly identified Boxwood Hall site (28-Un-56), and report writing.

2.1 Research Methods

Background research was conducted to identify previously registered archaeological sites or historic properties within or near the project location, to assess the potential for unidentified archaeological resources or historic resources within the project location, and to develop relevant pre-Contact Native American and historic contexts for the property. A good faith effort was made to conduct research at the NJHPO by reviewing NJ-GeoWeb and the updated list of historic properties to determine if previously identified historic properties listed in the NJR and/or NRHP or eligible for listing in the NRHP are within or adjacent to the project location. The list of cultural resource survey reports on the NJHPO's website was reviewed to identify prior surveys conducted in or near the project location. Research at the NJHPO's facility was not possible due to COVID-19 restrictions. Reports on file at the NJHPO documenting these surveys were also reviewed when possible, or if housed in the RGA library. Files at the NJSM were examined via electronic transmission to identify the locations of any registered archaeological sites within or near the project location. Additional background research consisted of a review of pertinent primary and secondary sources, including historic maps, atlases, historic aerial photographs, and local and county histories available online.

2.2 Fieldwork and Laboratory Methods

Field Methods

Subsurface testing included the planned excavation of a three- by four-foot excavation unit (EU) along the front side (south elevation) of Boxwood Hall to expose the southwest corner of the building's foundation. The location of the EU was plotted using measuring tapes and compasses. A datum was established for the EU and used for vertical measurement. The EU was extended to a maximum depth of 2.0 feet below ground surface or approximately 2.3 feet below datum based on the on-site structural engineer's determination of need. Flat shovels and trowels were used for excavation. Individual soil strata or sediment deposits were hand excavated separately and screened through one-quarter-inch wire mesh to facilitate artifact recovery. All recovered artifacts were cataloged by provenience on site. Non-diagnostic and/or ubiquitous historic materials, including coal and brick, were noted, sampled, and then discarded. Modern materials were noted but not retained. The recovered assemblage from the archaeological fieldwork consists of historic cultural material. No pre-Contact cultural material was encountered during the survey.

Soil characteristics, stratum designations, and soil color utilizing standardized Munsell color charts were recorded on standardized field forms using FileMaker software on iPad Air 2.0 tablets. Profiles of EU-A were hand-drawn and features were drawn in plan; photographs of fieldwork and excavations were taken. Features were excavated by natural stratum in bisects and sampled. The purpose of feature sampling was for future testing to determine age, chronology or span of site use, function and site activities over time, and site integrity to aid in an evaluation of significance under NRHP criteria, if warranted. All excavations were backfilled and the ground was restored to as near its original contours as possible upon completion of testing. Photographs of field activities and general site views were taken.

Laboratory Methods

Artifact processing consisted of cleaning and hand washing non-friable cultural material. Durable artifacts (i.e. ceramic, glass) were washed to remove residual soil and to facilitate identification. Less durable artifacts (i.e., metal and organic materials) were carefully dry-brushed to remove residues prior to identification. Artifacts were placed in archival, 4-mil polyethylene zip lock bags. The historic artifacts were analyzed, and cataloged according to provenience, artifact group, material, artifact type, decorative or surface treatments(s), and period of manufacture (when applicable) using standard references (e.g., Miller et al. 2000; Wells 1998). A catalog of retained artifacts is presented in Appendix C.

All retained artifacts were catalogued, and an effort was made to identify and date all temporally and functionally diagnostic artifacts. The artifact assemblage, project documents, and all field notes, and photographs are temporarily stored at the RGA headquarters in Cranbury, New Jersey.

EXHIBIT 'C'

3.0 BACKGROUND RESEARCH

Background research was conducted to determine if previously identified archaeological resources or historic properties exist within or near the project location and to develop the environmental and cultural contexts presented in this section that serve as the basis of predictive models, identification of expected site types, and the overall pre-Contact and historic sensitivity assessment of the project location. Historic maps and published histories were also consulted. Previous surveys and resource files at the NJHPO were reviewed, when possible.

3.1 Environmental Setting

The project location lies within the New Jersey Piedmont Lowlands Physiographic Province (Figure 3.1; Wolfe 1977). The landform development of this physiographic province consists of soft red shale, interbedded sandstones and siltstones, and resistant argillites and volcanic rocks (Wolfe 1977). The project location is situated between the Watchung Mountains and Newark Bay, an area characterized by a gently undulating surface that gradually slopes from the New Jersey Highlands to the Coastal Plains. The project location is underlain by bedrock consisting of Lower Jurassic and Upper Triassic-age sandy mudstone of the Passaic Formation (Drake et al. 1996). Surficial sediments mapped within the project location consists of late Wisconsinan-age Rahway Till glacial deposits (Stone et al. 2002).

The project setting is a significantly modified urban environment and has been subject to continual development for over two centuries. The soils mapped within and proximate to the project location are classified as Urban Land. This soil classification is characterized by surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material (Figure 3.2; NRCS 2021). There are also numerous utility lines buried along East Jersey Street.

The project location is located on a flat topographic setting at an elevation of approximately 23 feet above mean sea level. The area is drained by the Elizabeth River which is located approximately 1,100 feet to the south. Water flows from the Elizabeth River into Arthur Kill, meeting waters of the Atlantic Ocean via the New York-New Jersey Harbor Estuary.

The natural vegetation classification for the project location is Mixed Oak Forest, Northern Phase, a term that reflects the drastic decline in American chestnut since pre-Contact times (Collins and Anderson 1994). Red, white, and black oaks, as well as species of hickory, red, and sugar maples, white ash, tulip trees, American beech, black cherry, black birch, sour gum, and American elm trees compose the Mixed Oak Forest in northern New Jersey. An understory of dogwood, hornbeam, spicebush, sassafras, ironwood, witch hazel, blueberry, black huckleberry, pinxter flower, poison ivy, Virginia creeper, Japanese honeysuckle, and wild grapes are also found in undisturbed Mixed Oak Forest areas (Collins and Anderson 1994:109). At the time of the survey, the vegetation within the vicinity of the project location consisted of mowed grass lawn, planted daffodils, and landscaped boxwood shrubs.

3.2 Pre-Contact Context

New Jersey prehistory is organized into three broad time periods: the Paleoindian period, the Archaic period, and the Woodland period (Chesler 1982; Custer 1996; Grossman-Bailey 2001; Kraft 2001; Mounier 2003). These temporal periods frame the study of pre-European human occupation in the Middle Atlantic region to approximately A.D. 1550 to 1600. This point represents the initial contacts between Native American populations and European explorers and colonists. A brief summary of each period is presented below.

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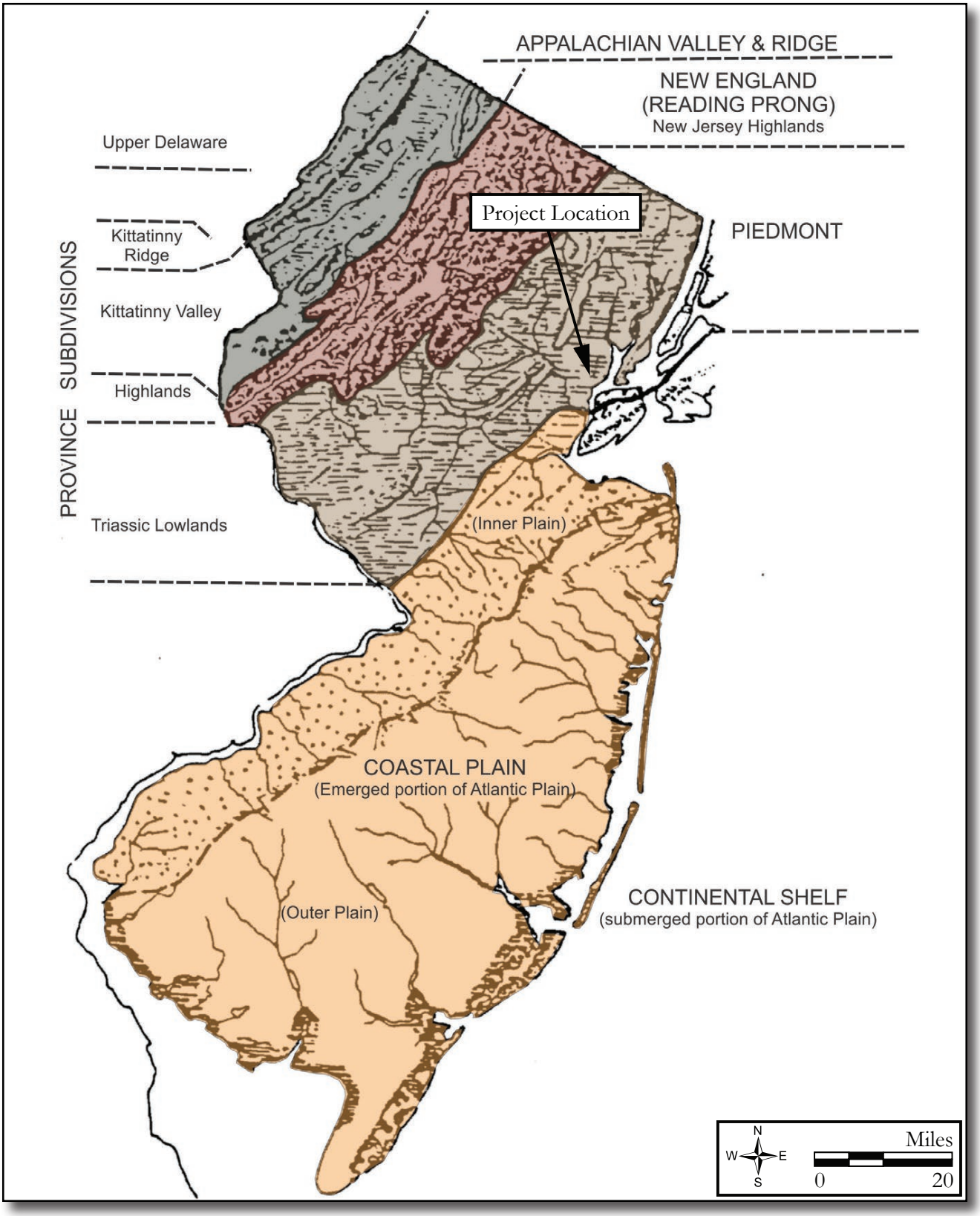

Figure 3.1: Physiographic provinces map
(adapted from Wolfe 1977).

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Figure 3.2: Soils map
(NRCS 2021, Soil Survey Staff, Natural Resource Conservation Service, United States Department of Agriculture. Soil Survey Geographic [SSURGO]).

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Paleoindian Period (ca. 13,000 to 10,000 B.P.)

The Paleoindian period represents the initial occupation of the Northeast by highly mobile populations in a deglaciated landscape. Major landscape features likely influenced the occupational patterns of Paleoindian groups, including glacial lakes Passaic and Hackensack and associated marshes, cuestas, low terraces, major river valleys, and a much lower Atlantic coastline (Kraft 2001; Marshall 1982; Pagoulatos 2004). Spruce, fir, pine, and sedge transitioned to pine, oak, and spruce forest between 12,000 and 10,000 B.P., suggesting a mosaic of boreal and deciduous vegetation which influenced faunal patterns (Funk 1976:209; Kraft 2001; Marshall 1982; Pagoulatos 2004). Paleoindian inhabitants of New Jersey were likely organized as small, highly mobile hunting-gathering bands. Though earlier studies emphasized Paleoindian hunting of large game animals, recent research suggests exploitation of a more diverse set of resources, including smaller game, collected wild plants, and aquatic resources (Custer and Stewart 1990; Nicholas 1988). Evidence from the Shawnee-Minisink site in the Upper Delaware Valley, for instance, suggests a subsistence regime whereby fishing and plant foraging, including hawthorn plum, berries, and hickory nut, supplemented game hunting (Stewart 2007). Relatively few Paleoindian sites have been documented in the New Jersey Piedmont (Pagoulatos 2004:130). Two of the more well-documented Paleoindian sites in northern New Jersey, the Plenge and Zierdt sites, were located on terraces along the Musconetcong and Delaware rivers, respectively (Kraft 1973; Gingerich 2013; Werner 1964). However, the Dutchess Quarry Cave site in Orange County, New York suggests that rock shelters/caves were also used by Paleoindians (Funk 1976; Kopper et al. 1980). The Paleoindian toolkit commonly included fluted projectile points, unifacial end- and side-scrapers, gravers, and flake tools (Funk 1976:212-220; Gingerich 2013).

Early Archaic Period (ca. 10,000 to 8,000 B.P.)

The lifeways of Early Archaic period (circa 8000 B.C. to 6000 B.C.) inhabitants were likely similar to those during the end of the Paleoindian period, as this transition was not marked by a punctuated change, but rather a variety of small, gradual adjustments over time (Adovasio and Carr 2009). Environmental conditions in northern New Jersey during this period included a cooler climate and a mix of areas containing boreal and deciduous vegetation (Pagoulatos 2003:16; Sirkin 1977). Evidence for Early Archaic occupation in northern New Jersey suggests that small, mobile bands seasonally exploited resources in riverine and coastal areas (Dumont and Dumont 1979; Kraft and Mounier 1982a). Early Archaic sites are relatively rare in the New Jersey Piedmont, though a small number of sites have been identified primarily in terrace and floodplain settings, including in the Passaic River drainage (Pagoulatos 2003:25). Toolkits used during this period generally included knives, scrapers, and choppers, as well as smaller numbers of celts and drills (Kraft and Mounier 1982a). Early Archaic tool forms include a variety of stemmed, notched, and bifurcate-base points which replaced the fluted points of the earlier Paleoindian period.

Middle Archaic Period (ca. 8,000 to 5,000 B.P.)

Ongoing climactic shifts associated with the Atlantic episode had produced a fully Holocene environment during this period and increased deciduous, mast-producing vegetation helped to sustain a relatively modern faunal composition in the region (Custer 1989:125-126; Kraft 2001). Archaeological evidence suggests the occupation of riverine, estuarine, marsh and stream settings was common, though data for the Middle Archaic period in Northern New Jersey is sparse (Custer 1996; Kraft 2001; Kraft and Mounier 1982a). Middle Archaic components have also been identified at rockshelters in northern New Jersey (Lenik 1999:13). Notched, bifurcate, and stemmed projectile points continued to be used to tip spears for hunting. The increase in mast-bearing deciduous trees also served as a substantial food resource as well as boosting the population of deer and other game (Carr 1998; Kinsey 1983). A variety of ground stone tools were in use by the end of this period. Such tools suggest increased adaptation to hardwood forest resources (Kinsey 1983:84; Lenik 1999:13).

Late/Terminal Archaic Period (ca. 5,000 to 2,500 B.P.)

The Late Archaic is characterized by continued adaptation to the temperate climate and emergent deciduous forest (Kraft and Mounier 1982a; Ritchie 1965:32). The observed increase in the number and size of sites during this period suggests increased population and decreased mobility, likely due to these environmental changes which offered an increased food supply (Custer 1996; Kraft 2001; Kraft

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and Mounier 1982a; Tuck 1978:38). This Late Archaic population increase has also been observed in the northern Piedmont (Lenik 1985:157). Though Late Archaic populations focused their occupations in riverine settings, they exploited a substantial variety of environmental locales. Band movements were seasonally orchestrated among sites of varying sizes to exploit resources at different times of the year (Custer 1984; Kraft 2001). Late Archaic site patterning in the New Jersey Piedmont region suggests that microband base camps, where a variety of tool-making and processing tasks occurred, were located along major interior riverine drainages, with smaller temporary hunting and procurement encampments present in varied environmental locations (Pagoulatos 2001a). Late and Terminal Archaic sites have also been identified in northern New Jersey near lakes, wetlands, springs, upland terraces, hilltops, and rockshelters, in addition to more common riverine terrace and floodplain settings (Lenik 1999:13-14). Decreased band mobility and increased population likely resulted in group territorialization during this period (Kraft and Mounier 1982a; Pagoulatos 2001a). Territorialization may have helped to establish long-distance exchange networks between groups during the Late Archaic (Stewart 1989). Mortuary ceremonialism and the appearance of cremation burials also emerged as a cultural practice during the Late Archaic. A variety of notched and stemmed projectile points were in use during the Late Archaic period (Kraft 1990, 2001). By this time, toolkits also regularly included heavy woodworking tools, such as axes, adzes, and gouges, manufactured through pecking and grinding of durable metamorphic and sedimentary stones. These implements could be used in felling trees and hollowing logs for canoes (Kraft 2001). During the latter portion of the Late Archaic, vessels carved from steatite emerged for food preparation (Kraft 2001).

Early Woodland Period (ca. 2,500 to 1,600 B.P.)

Many Late Archaic lifeways endured throughout the Early Woodland period, including hunting, fishing, and gathering activities oriented to a seasonal cycle (Williams and Thomas 1982). The Late Archaic trends of long-distance exchange networks and mortuary ceremonialism continued and became more elaborate throughout the Early and Middle Woodland periods (Custer 1996; Kraft 2001; Stewart 2003; Lowery 2012). Archaeological research in the northern portion of the Piedmont suggests an Early Woodland depopulation in the area based on the relative paucity of diagnostic Early Woodland material (Lenik 1985:157-158). Substantially fewer Early Woodland sites have been documented in the New Jersey Piedmont compared to Late Archaic sites. Although a few microband base camps have been identified (i.e., Hummer 1994), most Early Woodland sites in this physiographic region include short-term hunting or procurement encampments (Pagoulatos 2001a). An Early Woodland cremation burial containing caches of Meadowood points, pendants, gorgets, and celts was also identified near the Passaic River overlooking Great Piece Meadow in Fairfield (Kraft 1989). The Early Woodland period in New Jersey was marked by the emergence of clay pottery technology, which replaced the steatite vessels of the preceding period (Kraft 2001; Lenik 1999:14).

Middle Woodland Period (ca. 1,600 to 1,000 B.P.)

The occupational model for this period suggests seasonal aggregation of social groups in relatively large base camps, often in riverine and stream confluence settings, with several satellite encampments and procurement areas occupied intermittently in a variety of environmental locales (Custer 1996; Harris 2007; Kraft 2001; Williams and Thomas 1982). Evidence from the Delaware Valley suggests substantial exploitation of aquatic resources, including migratory fish from riverine marshes and shellfish from coastal locales (Schindler 2008; Stewart 1991, 1999; Williams and Thomas 1982). Semi-sedentary base camp occupation also may have permitted limited experimentation with horticulture in parts of New Jersey. Evidence for Middle Woodland occupation in the New Jersey Piedmont suggests that interior sites in this region may have served as short-term foraging or hunting encampments (Pagoulatos 2001a). Exchange networks and mortuary ceremonialism persist during the Middle Woodland, suggesting contact with extra-regional populations (Kraft 2001; Lowery 2012; Mounier 1981; Stewart 2003). Ceramic manufacture was refined during this period and a variety of new surface treatments and decorations become common, including cord-marking (Stewart 1998). An increased usage of argillite from north-central New Jersey has also been observed archaeologically during the Middle Woodland period (Williams and Thomas 1982). Notched and stemmed projectile points continued to be used, with Jack's Reef and Fox Creek types serving as Middle Woodland diagnostics (Lenik 1999:14).

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Late Woodland Period (ca. 1,000 to 450 B.P.)
The Late Woodland period is characterized by semi-sedentary base camps often located on floodplains, coincident with increased sedentism and the selective usage of seasonal procurement sites (Kraft and Mounier 1982b; Stewart 1991; Stewart et al. 1986; Pagoulatos 2001b). Hunting and foraging bands continued to make use of encampments in interior and coastal areas within relatively well-defined territories. The occupants of northern New Jersey at this time were related to the Munsee-speaking Delaware groups met by the European explorers in the late sixteenth century (Kraft and Mounier 1982b). Algonquian speaking people who occupied northern New Jersey likely interacted with Iroquoian speaking groups who inhabited New York State and central Pennsylvania based on the distribution of ceramics and other artifacts (Custer 1996: 269). Evidence from the Upper Delaware Valley suggests the emergence of horticulture in this area to supplement the subsistence regime (i.e., Kraft 1972). Technological changes include the use of small, triangular projectile points with the bow and arrow and the development of complex, often locally specific ceramic designs and decorative motifs (Kraft 2001; Stewart et al. 1986). The elaborate mortuary customs of the Early and Middle Woodland periods also decline in the region during the Late Woodland period. Lenik (1985:158-159) describes a Middle-Late Woodland population rebound in the northern portion of the Piedmont, as suggested by increases in both site size and occupation area during that time frame. The Late Woodland period terminates at the arbitrary date of 450 B.P. (A.D. 1550 to 1600), roughly indicating the beginning of European colonial exploration and settlement in the region.

The Contact Period
The Contact period comprises the period of European exploration of the Atlantic coastline and near interior, during which early interactions began between the native inhabitants of New Jersey and Europeans. Most historians credit Giovanni da Verrazanno and Henry Hudson with initiating contact with the Lenni-Lenape and other native groups of the Northeast (Kraft 2001). Comparable to earlier periods, the effects and timing of these interactions vary significantly throughout the region. In New Jersey, early European traders and fishermen made sporadic contact with Native Americans; however, the effects of these early interactions are still not understood. Mounier (2003:24) notes that prior to European settlement there appears to have been a Native American population collapse on the coast, which may have been caused by diseases introduced during early trading interactions, combined with group decisions to relocate as incidents of conflict increased.

Contact period sites are rare. While Early European settlers also inhabited northern New Jersey during the Contact period, this contact between Native Americans and Europeans was "occasional or intermittent" and Native Americans "...maintain[ed] their own level of technology... and ...cultural lifeways" (Lenik 1989: 117). Williams and Kardas (1982:185) point out that by the early 1600s the Contact period is more recognizable in the archaeological record due to European settlement and the establishment of trading posts.

Summary of pre-Contact archaeological resources in the vicinity of the project location
No registered pre-Contact sites or collector's sites have been identified in or within one mile of the project location. Alanson Skinner and Max Schrabisch documented several sites in the Piedmont along the New York Bay and Raritan Bay in the early twentieth century (Skinner and Schrabisch 1913). The closest site to the project location identified by Skinner and Schrabisch consisted of "relics" found along the shoreline of the Arthur Kill near Elizabethport, approximately two miles to the southeast. Additional sites identified by Skinner and Schrabisch include a village site with "shell pits" and a camp site on the sand hills in Constable Hook in Bayonne to the east of the project location, camp sites in Bayonne along the shoreline of Newark Bay to the northeast of the project location, and numerous sites on Staten Island across the Arthur Kill to the east of the project location (Skinner and Schrabisch 1913: 42-45). Skinner and Schrabisch state that the absence of sites on the New Jersey shore of the Arthur Kill was due to more favorable environmental conditions on the Staten Island side of the Arthur Kill (Skinner and Schrabisch 1913:43). A 1635 map (Blaeu 1635) of the region attributes the area around Elizabeth as having been occupied by the 'Sahnicans' people with written sources identifying them as related to or eventually being displaced by the Raritans, another Unami-speaking group of the Lenni-Lenape (Wright 2009).

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3.3 Historic Context

Prior to 1664, the area of present-day City of Elizabeth came under Dutch control as part of New Netherland. During this period, the region was referred to as Achter Kol "behind the bay" by the early Dutch settlers, and from which the name of the nearby Arthur Kill is derived (Blaeu 1635; Thayer 1964). Although Cornelius Van Werckhoven "acquired the rights to the land between the Raritan and Passaic Rivers" in 1651 for the purpose of settling the area (Heritage Studies,1985:55), only a few Dutch plantations were established within the greater region during this time (Thayer 1964:5). New Netherland fell under British Control in 1664 and, in October of that year, a group of British, called the "Associates," purchased 500,000 acres of land from the Lenni-Lenape residing in nearby Staten Island (Thayer 1964). This purchase, called the "Elizabethtown tract" or "Elizabeth Purchase," included all of present-day Union County and parts of Essex, Middlesex, Somerset, and Morris counties (Heritage Studies, 1985). Following the Elizabeth Purchase, the area received an influx of English Puritan settlers and Elizabethtown became New Jersey's first permanent English settlement, which was named for the wife of Sir George Carteret, Proprietor of East New Jersey. Elizabethtown served as the first provincial capital of East New Jersey until the capital moved to Perth Amboy in 1686 (Cunningham 1976: 119; Snyder 1969: 241; Wacker 1975: 258).

Located at the head of navigation, Elizabethtown was positioned on a terrace bordering an extensive marsh that extended downstream along the riverbanks to Arthur Kill. The lots laid out by the Elizabethtown Associates around 1665 followed the traditional long lot system as well as the natural terrain, which created an irregular linear pattern for streets and lots (Wacker 1975: 388-392). In the 1660s, "…home lots of four acres each were laid out along both sides of the Elizabeth River on the first upland beyond the salt marsh…. In some cases, properties were irregular in shape due to the meandering nature of the river" (Wacker 1975:249). Most of the initial town lots also fronted the King's Highway – now Elizabeth Avenue – a former section of the old Dutch trail that leads to the Delaware River (Thayer 1964:18-19). Radiating out from the heart of historic Elizabethtown along the Elizabeth River, these early roads including the King's Highway, are depicted as early as John Hills' 1781 map of northern New Jersey (Figure 3.3). By late 1665, Elizabethtown was a community of 250 inhabitants living in 40 to 50 frame dwellings (Gordon 1834). The community grew steadily as a political and economic center throughout the seventeenth and early eighteenth centuries, and was established as a royal borough in 1740. By the mid-eighteenth century, Elizabethtown contained 1,000 people and approximately 150 dwellings, most of which were of frame construction covered with shingles and located on plots of four to six acres (Hatfield 1868; Honeyman 1923; Thayer 1964; Snyder 1969:238).

The residents of Elizabethtown were deeply involved in the events surrounding the American Revolution. As early as the passing of the Stamp Act in 1765, prominent Elizabethtown residents like Robert Ogden, grandson of Elizabethtown founder John Ogden, participated in the Stamp Act Assembly and Congress. During the Revolutionary War, the strategic position of Elizabethtown attracted a succession of military occupations by both sides, some related to nearby battles such as the Battle of Connecticut Farms, upriver from Elizabethtown (Meyer 1879; Figure 3.4). Most of the major Revolutionary War events near Elizabethtown and Elizabeth Port (now Elizabethtown Point), further downstream, took place on the northeastern side of the Elizabeth River, further west along the "Road From the Courthouse to ETown Point" (present-day Elizabeth Avenue) (see Figure 3.4; Meyer 1879). While no major Revolutionary War battles are known to have taken place in close proximity to the project location, many minor skirmishes and raids have been recorded as taking place within Elizabethtown (John Milner Associates, Inc. 2009; Munn 1976:30-36). Encampments of Hessian soldiers, referred to as "Yagers" or "Jägers," are mapped less than a quarter mile to the southeast of the project location on Meyer's 1879 Revolutionary War-era map (Meyer 1879; see Figure 3.4). These Hessian camp locations are also portrayed on a 1784 map by William Faden (Figure 3.5). Based on the length of time that passed between the Revolutionary War and the creation of the later 1879 map, it is likely that the location of regiments or Battalions may not be accurate, even though the locations are likely based on contemporary maps, surveys, or accounts.

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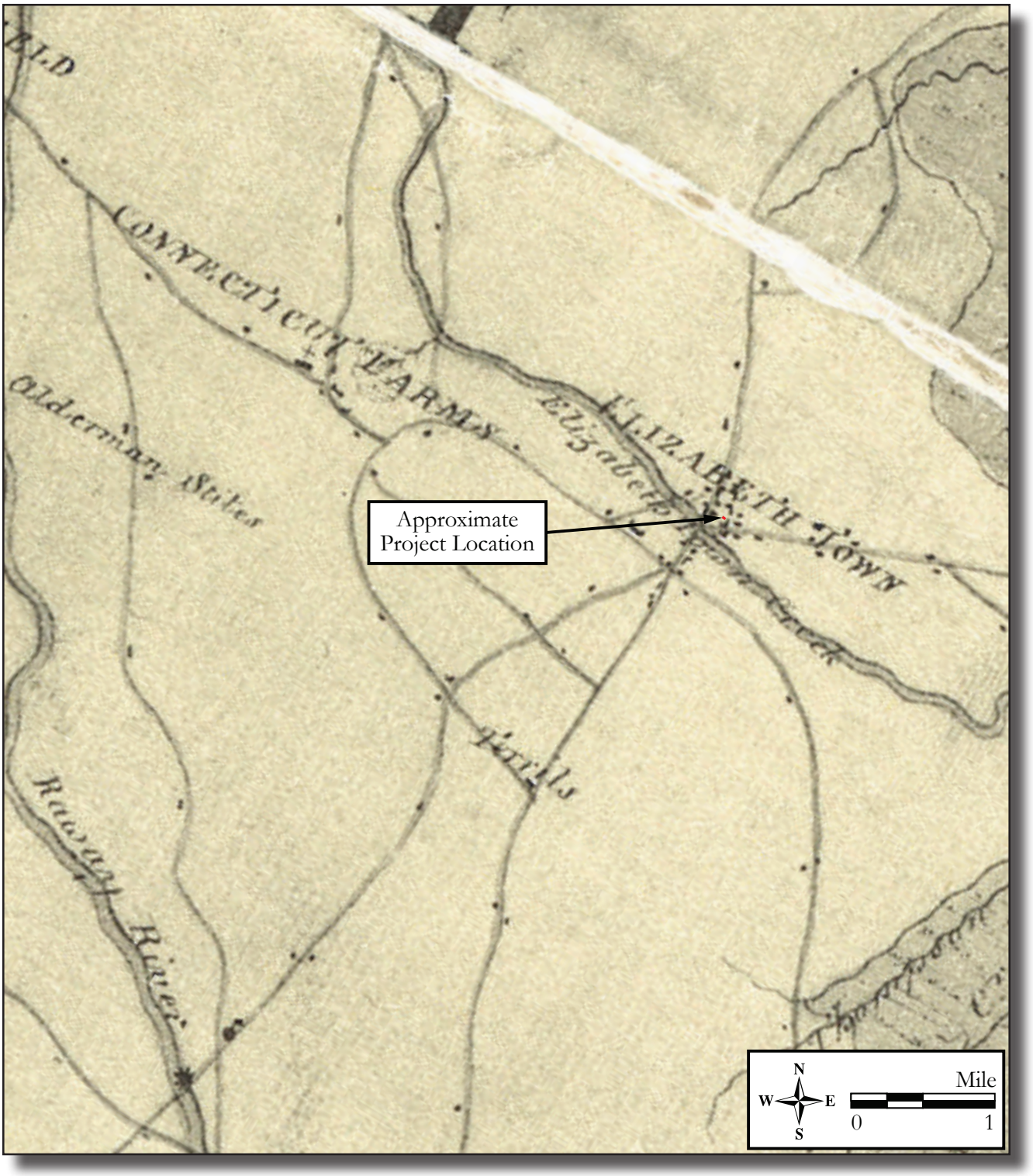

Figure 3.3: 1781 J. Hills, *A Sketch of the Northern Parts of New Jersey*.

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Figure 3.4: 1879 E. Meyer, *Map of Elizabeth Town, N.J. at the Time of the Revolutionary War, 1775 – 1783.*

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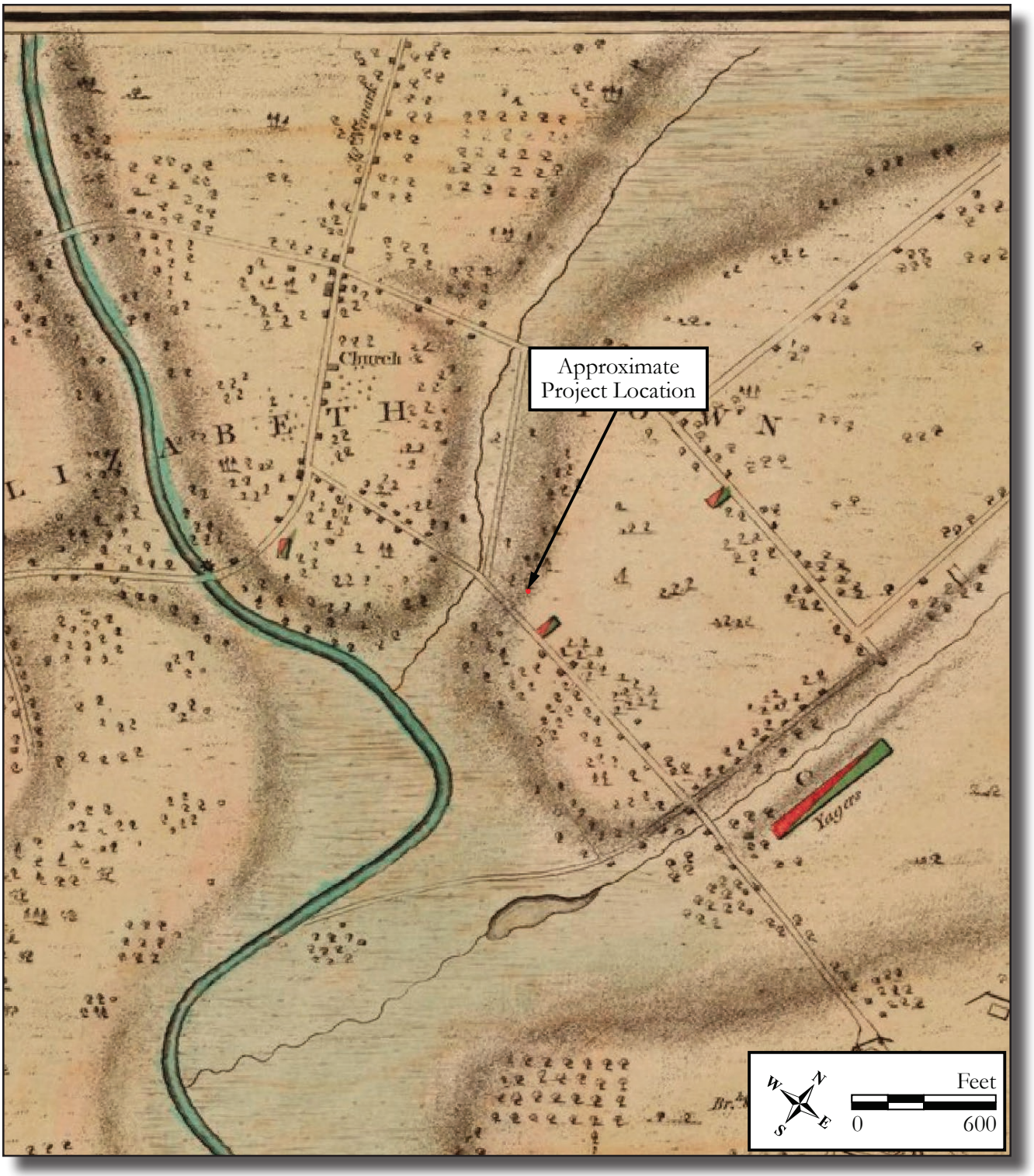

Figure 3.5: 1784 Wm. Faden and J. Hills, *Sketch of the position of the British forces at Elizabeth Town Point.*

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Elizabethtown was a major center of population by the mid-eighteenth century and roads were present which connected the city with smaller out communities and villages, such as Elizabethtown Point, located along the Arthur Kill (see Figures 3.3-3.5; Hills 1780, 1781; Meyer 1879; Faden 1784). According to the 1879 Meyer map, the Boxwood Hall property was surrounded by dozens of residences that dot the historic predecessor to East Jersey Street during the late eighteenth century. The 1879 Meyer map, which attributes the Boxwood Hall property to "Sam Woodruff" and "Jos. Woodruff," also depicts the Boxwood Hall house with an additional standalone or attached building immediately to the northwest of the main building and two rows of cultivated plots filling the space behind the dwelling (see Figure 3.4). As noted in the descriptions of the original allotments, Elizabethtown properties were typically three to four acres in size and many portray orchards or other cultivated areas during this period. Property size appears to decrease in size moving closer to the commercial and political center of the town, mapped approximately one quarter mile to the southwest of the project location (Meyer 1879).

At the turn of the nineteenth century, improvements in transportation changed the physical and cultural landscape of Union County. The development of turnpikes and rail systems stimulated the development of industrial, residential, and recreational facilities in the area. Transportation improvements began with the construction of the Morris and Essex Turnpike in 1801, which connected Elizabethtown to sources of commodities in Morristown, Stanhope, and Andover. By 1806, the Essex and Middlesex Turnpike provided a reliable transportation route from Newark through Elizabethtown southwest to New Brunswick and brought increased trade to Elizabethtown (Kardas and Larrabee 1993:13). The introduction of railroads also contributed to the rise of commercial and residential development. The New Jersey Railroad brought rail service to Elizabethtown in 1835 on a route that paralleled the Essex and Middlesex Turnpike (Kardas and Larrabee 1993:13). The path of the proposed New Jersey Railroad can be seen on the western side of Elizabethtown on Gordon's 1833 map (Figure 3.6; Gordon 1833). A second rail line, the Central Railroad of New Jersey (CRRNJ), spurred growth near the town's center (Figure 3.7; Sidney 1850). The CRRNJ, commonly called the New Jersey Central, had its origin in the Elizabeth and Somerville Railroad. Elizabeth and Somerville jointly established a railroad in 1831 in order to compete for intrastate traffic with the Morris Canal (Lane 1939: 385-386). Together, the railroads and the canal fostered a rapid commercial and residential expansion in the region, as Elizabethtown's economy transformed into an industrial base.

As the population of Elizabethtown expanded so did the geographic boundary of the town. Between 1833 and the 1850s, the number of structures mapped along Elizabeth Avenue to the east and west and along Broad Street to the north and south had increased substantially and more people had settled in Elizabethtown Port (Gordon 1833; Hassler 1846; Sidney 1850; see Figure 3.6 and 3.7). In 1855, Elizabeth was incorporated as a city (Snyder 1969: 238). Union County was split off from Essex County in 1857, with Elizabeth named as its county seat (Snyder 1969:237). By 1862, maps depict additional side streets dividing the blocks along East Jersey Street and Elizabeth Avenue with the number of structures increasing considerably as the space between properties decreased (Figure 3.8; Meyer & Witzel). The boundaries depicted on the 1862 Meyer and Witzel map appear to show a decrease in the lot size of the Boxwood Hall property, with the area once extending to the north truncated. However, no other structures or other property owner designation is depicted in the area to the north behind Boxwood Hall (see Figure 3.8). While the historical route of East Jersey Street is documented on maps by the late eighteenth century, it is only on Beers' 1872 map that the road is labelled as such (Figure 3.9; Beers 1872).

In the 1880s, the population of the City of Elizabeth had grown to 28,229 (Kelley and Dix 1914). Correspondingly, late nineteenth-century maps depict the construction of new dwellings in close proximity to the Boxwood Hall house along East Jersey Street. On the 1889 Sanborn map, a series of six, three-story, brick row-houses appear approximately 15 feet to the east of the project location, accompanying a two-story dwelling depicted a similar distance to the west of Boxwood Hall (Figure 3.10; Sanborn 1889). On the 1889 Sanborn map, the Boxwood Hall property, "1073 E. Jersey," is depicted as a four-story dwelling of frame construction with a two-story addition to the rear at the northeastern corner. A driveway runs from East Jersey Street more than 200 feet to the north and

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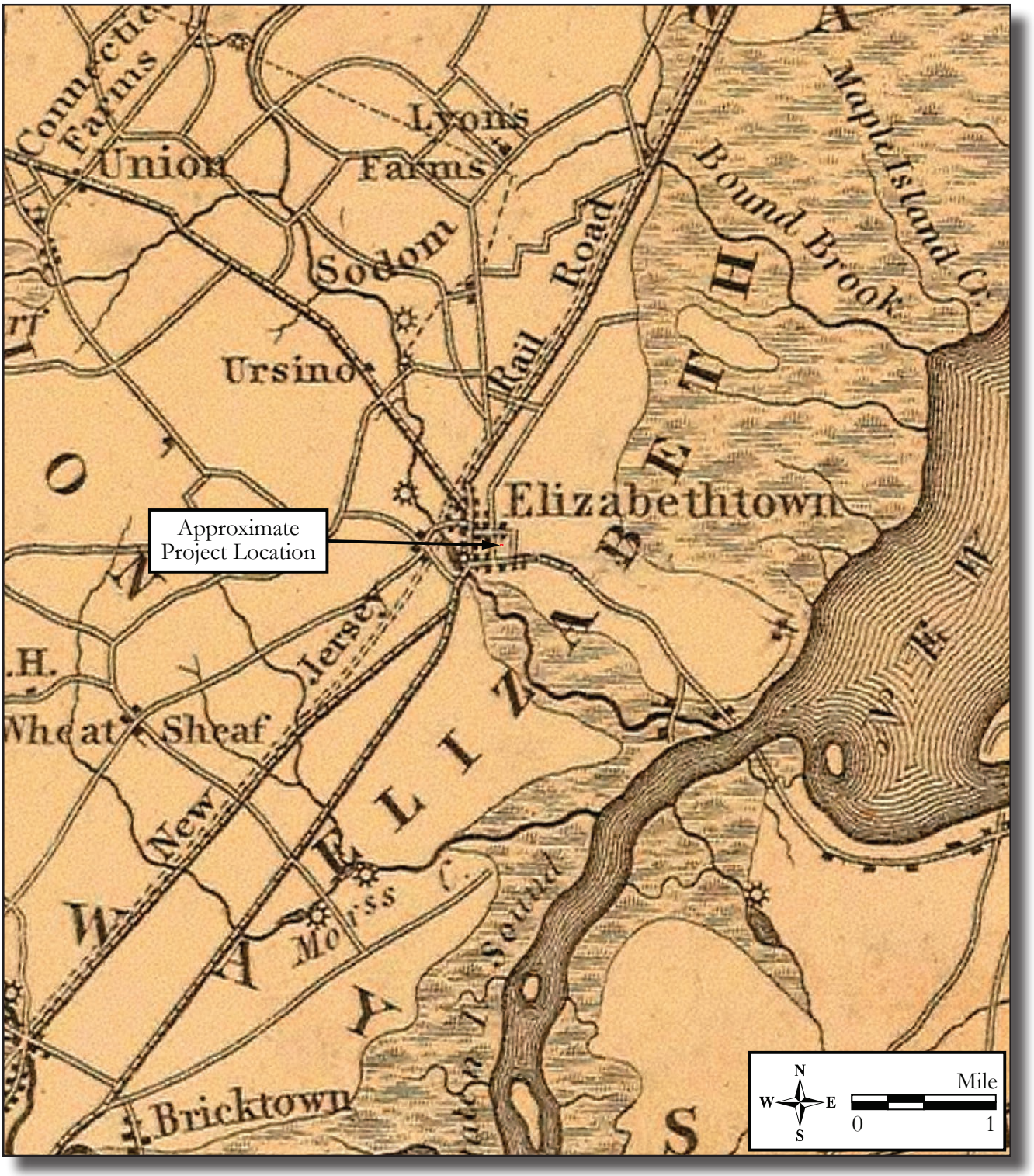

Figure 3.6: 1833 Th. Gordon, *A Map of the State of New Jersey with part of the adjoining States.*

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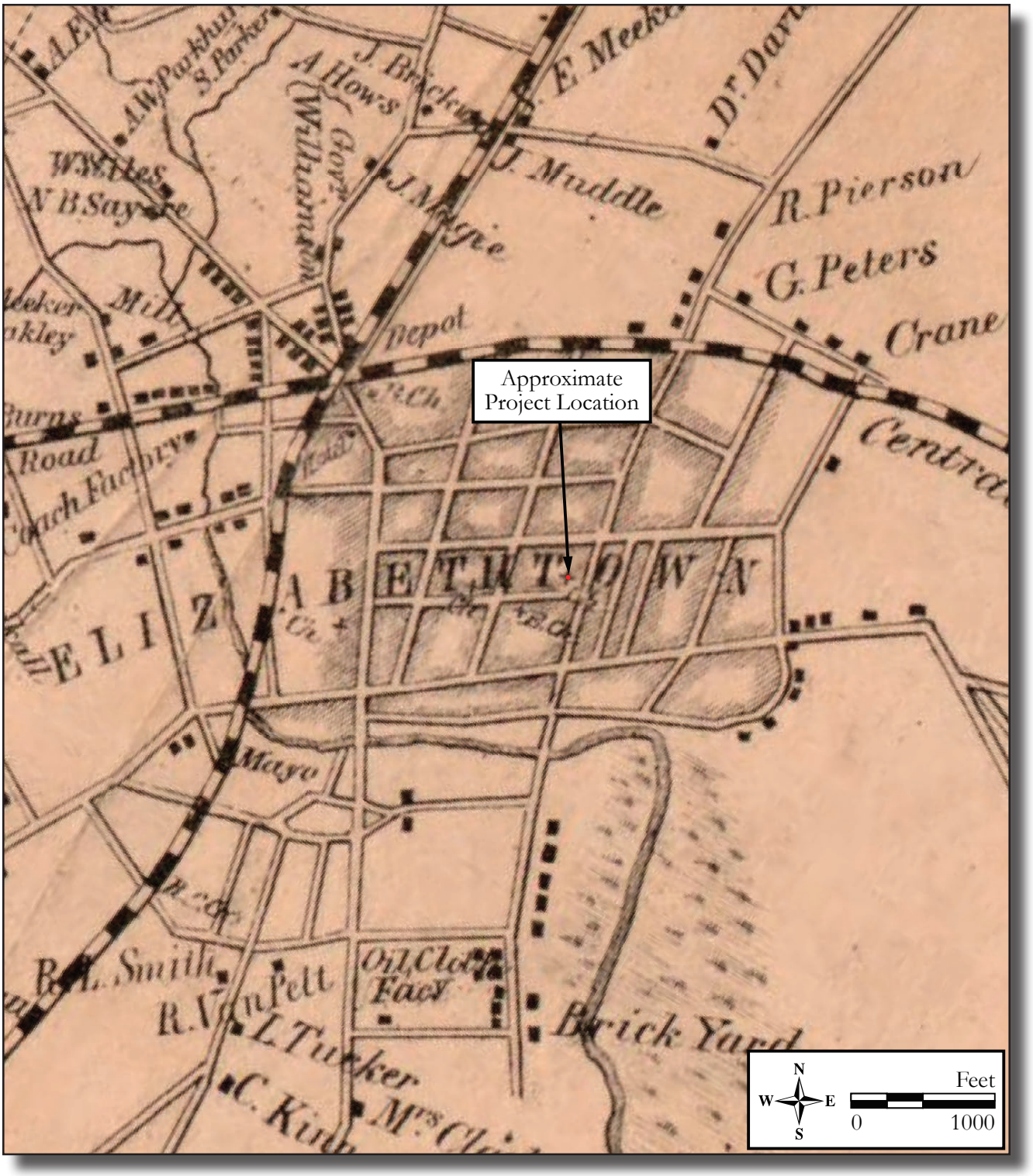

Figure 3.7: 1850 J.C. Sidney, *Map of Essex County, New Jersey, with the Names of Property Owners.*

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Figure 3.8: 1862 E. Meyer and P. Witzel, *Topographical Map of Union County, New Jersey*.

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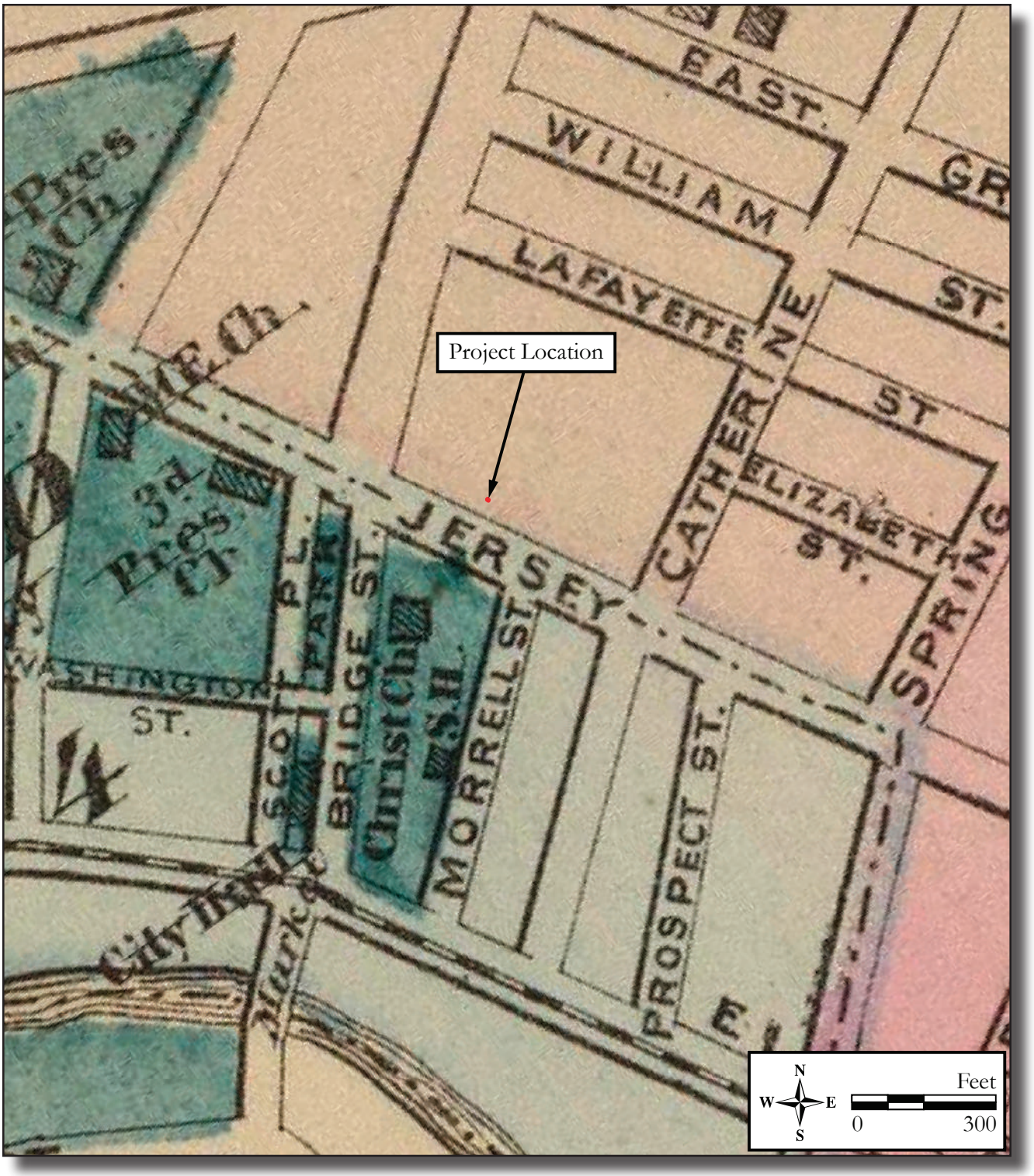

Figure 3.9: 1872 F.W. Beers, *Map of City of Elizabeth, Union Co., N.J.*

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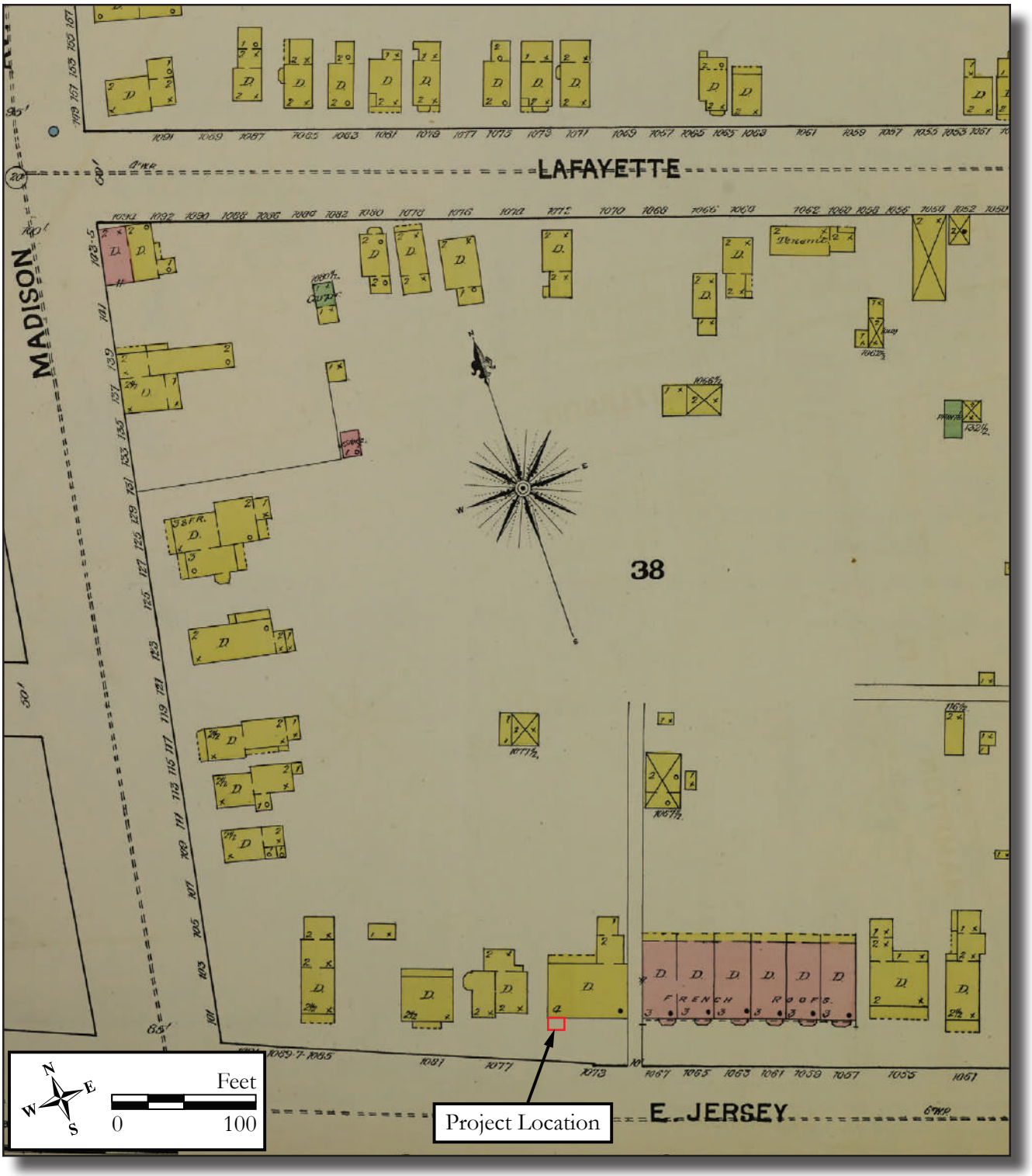

Figure 3.10: 1889 Sanborn Map Company, *Insurance Maps of City of Elizabeth, New Jersey, Plate 6*.

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abuts the east side of Boxwood Hall. In addition, a two-story frame stable is located approximately 200 feet to the northwest of the Boxwood Hall dwelling, though it is not clear if this stable is located within the Boxwood Hall property's lot as parcel boundaries are not depicted (see Figure 3.10; Sanborn 1889). The 1898 bird's-eye-view map of Elizabeth does not portray any associated outbuildings in the area behind Boxwood Hall. However, the 1898 map suggests that most of the lots extended back quite far from the street fronts and dwellings (Figure 3.11; Landis and Hughes 1898).

By the turn of the twentieth century, population within the City of Elizabeth had grown to 52,130 in 1900 and 82,415 by 1915 (Kelley and Dix 1914). The 1903 Sanborn map depicts the Boxwood Hall building as the "Home for Aged Women" (Figure 3.12; Sanborn 1903). The property lines depicted on the 1903 map indicate that the property measured approximately 70 feet in width fronting East Jersey Street and extending north approximately 250 feet. A one-story outbuilding of frame construction appears approximately 50 feet north of the dwelling's rear addition and also abuts the driveway to the east (Plate 3.1; HABS 1970; see Figure 3.12). By 1922, the Winfield Scott School had been construction approximately 250 feet to the northwest of the project location, though no change to the Boxwood Hall house or property is depicted (Sanborn 1922). Photographs of Boxwood Hall taken circa 1933, show a dirt driveway running north from East Jersey Street along the east side of the building with a series of pavers bordering the drive less than 10 feet from the side of the house. In addition, this photograph depicts an aluminum rainwater gutter along the southwestern corner of the house, appearing to enter the ground within the project location (HABS 1970). Many of the buildings surrounding Boxwood Hall were converted into commercial or multi-use properties by the second half of the twentieth century. The 1951 Sanborn map depicts an Undertaker, a Hotel, and general "Offices" occupying nearby buildings (Figure 3.13; Sanborn 1951). On the 1951 Sanborn map, the subject property is designated "Boxwood Hall Historical Museum" and the date of construction is noted as "1763." At this time, Boxwood Hall is recorded as a two-story frame building and the previously-mapped rear addition and outbuilding had been removed (see Figure 3.13). As depicted in aerial photography from 1954, the state of development for Boxwood Hall and the surrounding properties is much as it appears today, with a paved parking lot at the rear of the Boxwood Hall property, bounded to the east and west by the extant mid-nineteenth-century dwellings (1077 and 1065 East Jersey Street), and mid- to late twentieth-century buildings to both the east and west of the subject property's rear yard (NETR 1954, 1966 1979, 1987, 2017). Paving of the driveway located immediately west of the project location, previously a dirt driveway, was completed prior to 1971 (Plate 3.2; NPS 1971).

Property Specific Historic Context

A review of deed and title research and secondary source histories was conducted to provide a more in-depth background on the development history and previous occupants of the Boxwood Hall/ Boudinot Mansion historic property.

The building known as Boxwood Hall is thought to have been constructed circa 1750 by Samuel Woodruff, an early Mayor of Elizabeth. Following the death of the Hon. Samuel Woodruff in 1768, the house at 1073 East Jersey Street came into possession of his son Joseph Woodruff, Jr., who died within six months. The Woodruff estate was then deemed insolvent, and the property was seized by the sheriff to be sold. The settling of the Woodruff estate provides invaluable descriptions of the original house and associated property.

> "…the dwelling house late of the Hon. Samuel Woodruff Esq., deceased, at Elizabeth Town in New Jersey…It is two stories high and has four large rooms on a floor, with a back piazza of the length of the house. The wings are also two stories high having several commodious apartments: the lot contains about three acres, on which are several convenient out-buildings, and a capacious well-inclosed garden with a small orchard behind it" (The New York Gazette 1769).

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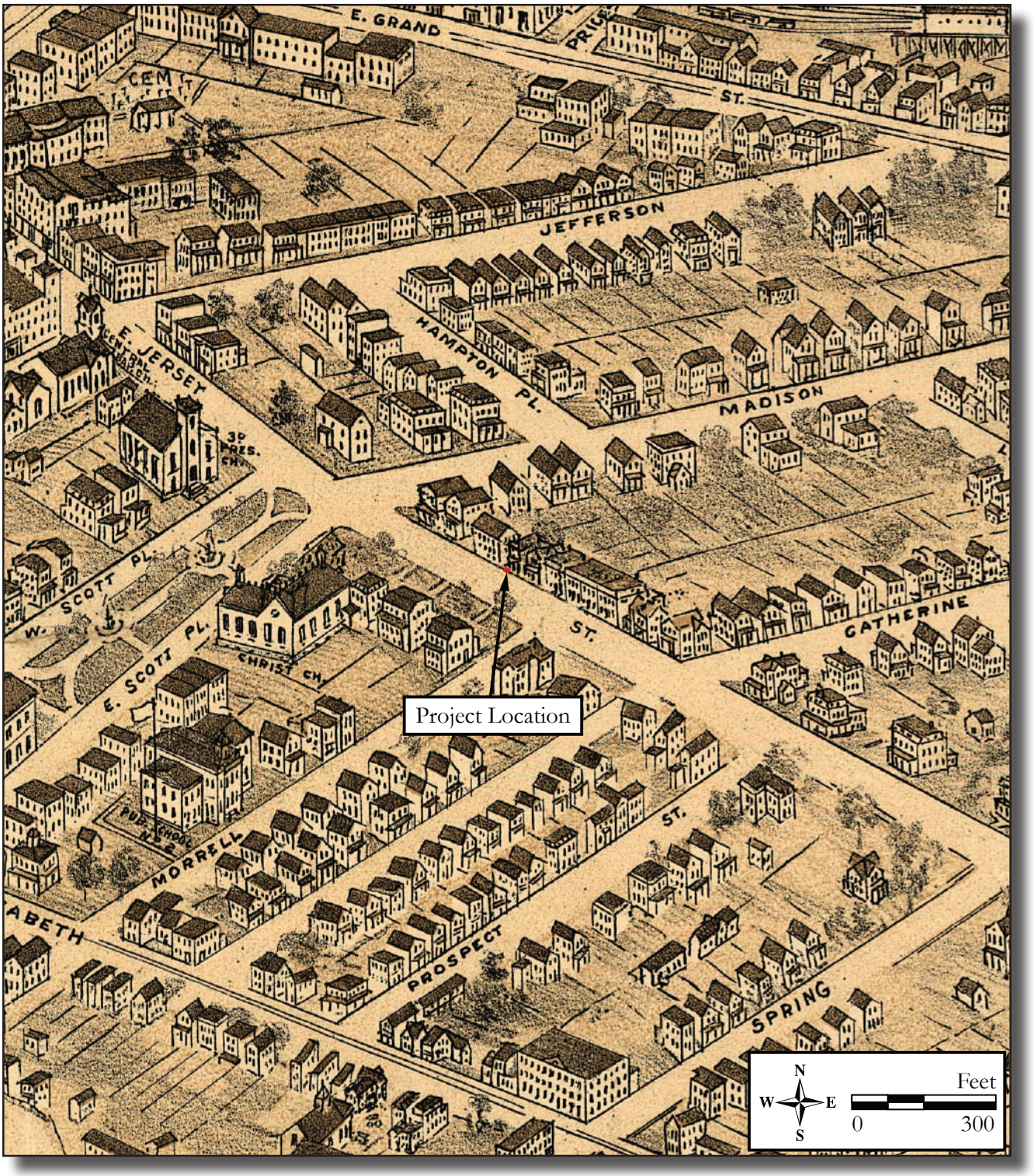

Figure 3.11: 1898 Landis and Hughes, *Bird's Eye View of Elizabeth, N.J.*

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Figure 3.12: 1903 Sanborn Map Company, *Insurance Maps of City of Elizabeth, New Jersey, Plate 42.*

EXHIBIT 'C'

Plate 3.1: Overview of the rear yard of Boxwood Hall prior to the 1942 restoration showing a frame outbuilding in the foreground, the rear service addition in the mid-ground, and the four-story dwelling in the background.

Photo view: Southwest

Photographer: George Neuschafer (HABS 1970)

Date: August 21, 1941

EXHIBIT 'C'

Figure 3.13: 1951 Sanborn Map Company, *Insurance Maps of City of Elizabeth, New Jersey.*

EXHIBIT 'C'

Plate 3.2: Overview of the project location showing the paved driveway to the west (left), areas of landscaped plantings, and the rainwater drainage gutter running from the roof toward the ground surface.

Photo view: Northeast

Photographer: Jack E. Boucher (NPS 1971)

Date: 1971

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> "The above dwelling house is two stories high, with four large rooms and a twelve-foot entry on a floor, all genteelly furnished, and a cellar under the whole. There are also two large wings, two stories high, and well-finished. On the premises are a Barn, Stable, Coach House, Cow House and a garden containing about two acres of land, with a very fine assortment of fruit trees and an asparagus bed of near a quarter of an acre" (Williamson 1772).

The inventory for the Woodruff estate also included a list of property for sale which included a series of enslaved men, women, and children (N.J. Archives n.d.; The New York Gazette 1769).

Elias Boudinot is thought to have purchased "Boxwood Hall" in 1772; no deed of conveyance is on record and the purchase may have been as late as 1784 when the family returned to Elizabethtown after escaping the frequent British raids in town (HABS 1970). Elias Boudinot, a former President and Foreign Affairs Secretary of the Continental Congress, resided in the Boxwood Hall house until 1795 when he sold the home to General Jonathan Dayton. Gen. Dayton, a signer of the United States Constitution, resided in Boxwood Hall until his death in 1824. An inventory of the estate of Jonathan Dayton after his death listed three enslaved individuals among his possessions (HABS 1970).

It was during Elias Boudinot's and Gen. Dayton's tenures at Boxwood House that several distinguished Revolutionary War figures were known to have visited the property: George Washington was served a meal on his way to his 1789 Presidential Inauguration, Alexander Hamilton is also noted as visiting the house though the date is unknown, and General Lafayette spent the night at Boxwood Hall in 1824 (HABS 1970; Thayer 1964; Aquilina et al. 1982).

Possession of the property was transferred to Jonathan Dayton's daughter, Hannah Spencer, in 1822 and then to her son (Gen. Dayton's grandson), Robert D. Spencer in 1835. In the same year, the property was conveyed to William C. DeHart (Essex County Deed Book n.d.,375-385). His son, also William C. DeHart, acquired the property and land upon his death in 1848. In 1870, DeHart (the second) demolished the two original lateral wings, added a rear service wing, and added two additional stories to the main house, replacing the original gable roof with a mansard roof. From 1871, the house also functioned as a boarding house (HABS 1970).

A deed in 1877 conveyed the home and property to George N. Stebbins then, in the same year, was deeded to The Washington Life Mortgage Company. In 1883, the Boxwood Hall property was conveyed to The Home for Aged Women of Elizabeth, New Jersey, where it operated as such until 1939. At this time, the house was being considered for demolition and interested local residents formed the Boxwood Hall Memorial Association, which raised funds to purchase the property and subsequently deeded it to the State of New Jersey. The house underwent restoration in 1942, where the 1870 two-story addition and rear kitchen wing were removed, the gable roof restored, and the wooden shingled exterior was painted red based upon remains found of the original exterior color (HABS 1970:23-24). Boxwood Hall was opened to the public in 1943 as a historic house museum.

3.4 National and State Register of Historic Places Eligible and Listed Properties

Documentation on historic properties available online through NJ-GeoWeb or on file at the RGA in-house library was reviewed in order to identify if properties previously listed in the NJR and/or NRHP or eligible for the NRHP are present in or adjacent to the project location (NJ-GeoWeb 2021; Heritage Studies 1985; Foster and Graham 1986). Boxwood Hall is a National Historic Landmark and is listed in the NRHP and NJR (NHL: 11/28/1972; NR: 12/18/1970; SR 5/27/1971). The property's period of significance spans from circa 1750 to 1824. Boxwood Hall is notable as one of the few eighteenth-century buildings remaining in Elizabeth as well as its role as a residence for prominent eighteenth- and nineteenth-century political figures Elias Boudinot and Jonathan Dayton (see Section 3.3 for a detailed history of the property). In addition to the subject property, a total of three additional historic properties or districts, and five unevaluated historic resources were identified within an approximately 250-foot radius of the project location (Figure 3.14).

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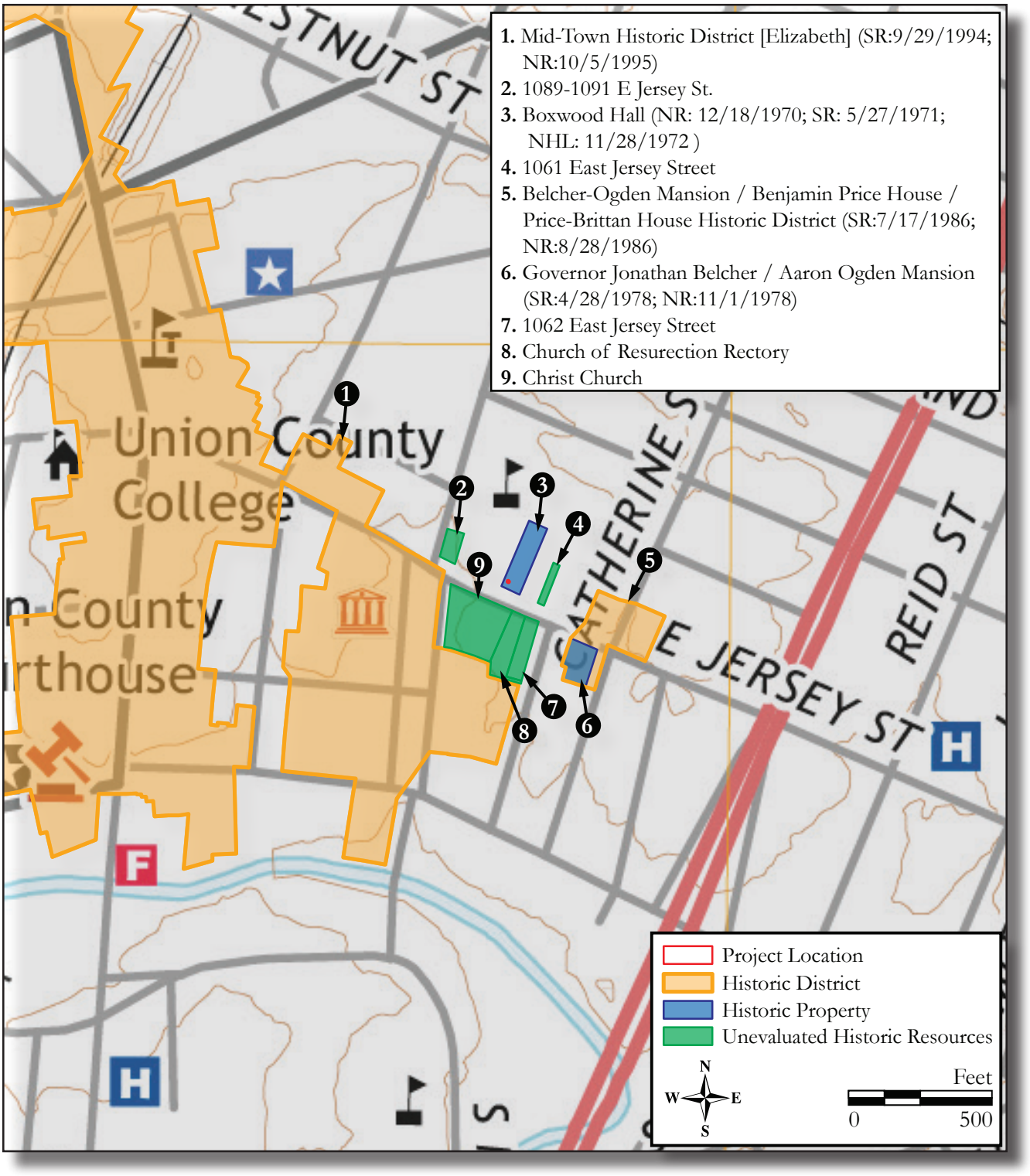

Figure 3.14: Map of identified historic properties, historic districts, and historic resources in relation to the project location
(2019 U.S.G.S. 7.5' Quadrangle: Elizabeth, NJ).

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The Belcher-Ogden Mansion / Benjamin Price House / Price-Brittan House Historic District (NR: 8/28/1986; SR: 7/17/1986) is located approximately 250 feet to the east of the project location. The district encompasses three contributing properties: the Belcher-Ogden Mansion, the Benjamin Price House (SHPO opinion 4/19/1983), and the Price-Britton House. The district's period of significance spans from 1700 to 1899. Although each of the three contributing properties is individually eligible for the NRHP under Criteria A and C for their associations with eighteenth- and early nineteenth-century urban development and architecture of Elizabeth, only the Belcher-Ogden Mansion is currently listed in the NRHP and NJR (NR: 11/1/1978; SR: 4/28/1978) (NJ-GeoWeb 2021; Heritage Studies 1985).

The Mid-Town Historic District boundary is located approximately 230 feet to the west of the project location. This historic district was identified and recommended eligible as part of the 1990 Design Guidelines for Historic Midtown Elizabeth Special Improvement District and is listed in the NRHP and NJR (NR: 10/5/1995, SR: 9/29/1994). The period of significance for this historic property spans from circa 1855 to 1941 and qualifies for listing based on NRHP Criteria A and C as a district that clearly characterizes the City of Elizabeth's urban preeminence during the industrial era (NJ-GeoWeb 2021; NPS 1994).

The southeastern boundary of the Central Elizabeth Historic District is located approximately 100 feet to the south of the project location. The 1985 Historic Sites Survey of Elizabeth identified this area as "the commercial and institutional heart of Elizabeth" that developed from the original settlement at Elizabethtown and contains a markedly late nineteenth- to early twentieth-century urban character. As a result of the 1985 survey, the authors determined this district to be eligible for listing in the NRHP (Heritage Studies 1985). At the time of the present survey, no NJHPO opinion had been issued. However, much of this district's boundaries are within those of the NJR- and NRHP-listed Mid-Town Historic District (NJ-GeoWeb 2021).

In addition to the above listed and contributing properties, five identified but unevaluated historic resources are located in close proximity to the project location (see Figure 3.14; NJ-GeoWeb 2021):

- Christ Church - St. Augustine's, 1064 East Jersey Street
- Church of the Resurection Rectory, 1064 East Jersey Street
- 1062 East Jersey Street
- 1061 East Jersey Street
- 1089-1091 E. Jersey Street

3.5 Known Archaeological Sites and Previous Cultural Resources Surveys

Registered Archaeological Sites

A review of the NJSM site files, collector's maps on file at the NJHPO, and published accounts (Cross 1941; Schrabisch and Spier 1915; Skinner and Schrabisch 1913) indicated that there are no registered archaeological sites within or adjacent to the project location. There are five registered historic archaeological sites, ranging in date from the late seventeenth century into the twentieth century, within one mile of the project location (Table 3.1).

These nearby historic period archaeological sites include deposits related to domestic occupation and religious activities, remains of a riverside wharf, and evidence of a local pottery industry (see Table 3.1). There are no pre-Contact archaeological sites within one mile of the project location. The project location is not located within any archaeological site blocks and no sites are mapped within one mile on the collector's maps at the NJHPO (NJGeo-Web 2021).

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Table 3.1: Registered archaeological sites within one mile of the project location.

NJSM Site Number/Name	Temporal Designation	Site Type	Distance (ft.) and Direction from APE	Closest Water Source/ Distance (ft.)	Reference
28-Un-29 / Block 9, Lot 1262	Historic: late 18th to early 19th centuries	Domestic occupation deposits	1,100/ Southeast	Elizabeth River / 250	TAMS Consultants, Inc. 2002; NJSM
28-Un-30 / Block 9, Lot 1259	Historic: late 18th to early 20th centuries	Domestic occupation deposits	1,200/ Southeast	Elizabeth River / 650	TAMS Consultants, Inc. 2003; NJSM
28-Un-31 / Block 9, Lot 543AE3 (East)	Historic: late 18th to early 20th centuries	Industrial (wharf)	1,500/ Southeast	Elizabeth River / Adjacent	TAMS Consultants, Inc. 2006; NJSM
28-Un-48 / Keen Pruden Estate Archaeological Site	Historic: second half of 19th century	Domestic occupation deposits; Industrial (Pottery kiln)	1,200/ Southwest	Elizabeth River / Adjacent	CRCG 2009, NJSM
28-Un-49 / St. John's Parsonage Archaeological Site	Historic: late 17th through 20th centuries	Domestic and religious deposits; Possible industrial (Pottery kiln)	1,300/ Southwest	Elizabeth River / Adjacent	CRCG 2009, NJSM

NJSM: New Jersey State Museum files
CRCG: Cultural Resource Consulting Group

Previous Cultural Resource Surveys

The area immediately to the rear of the Boxwood Hall building has been previously "probed" in advance of exterior improvements, including the addition of an accessible ramp, the installation of shale pavers, and the creation of a garden plot. The soils encountered appeared to contain material associated with the demolition of the circa 1870 rear service wing that took place in 1942 to 1943. The artifacts recovered during this testing are located on site (Katherine Craig, personal communication, March 31, 2021).

A review of the NJHPO records and those on file at the RGA office indicated that five prior cultural resources surveys have been conducted within close proximity to the project location (A. Nelessen Associates, Inc. 1990; Geismar 1995; Crossroads of the American Revolution National Heritage Area 2011; URS 2014; Dennis Bertland Associates and Richard Veit 2019).

A 1990 report entitled Design Guidelines, Historic Midtown Elizabeth Special Improvement District, City of Elizabeth, Union County, NJ was conducted by A. Nelessen Associates, Inc. and Short and Ford, Architects as a part of the city's building review procedures for sign and façade design standards within the downtown study area (A. Nelessen Associates, Inc. 1990). Due to the ongoing COVID-19 pandemic-related restrictions, this report was unavailable for review at the time of the survey (NJHPO shelf code: UNI DG 30). However, records available through the NJHPO's online viewer, NJ-GeoWeb, indicate that the Mid-Town Historic District [Elizabeth] and its contributing properties were identified during this survey (NJ-GeoWeb 2021).

A 1995 Phase IA archaeological technical survey completed for the Newark-Elizabeth Rail Link Project determined the area located adjacent and to the south of the project location, between East Jersey Street and the Elizabeth River, to be potentially sensitive for both pre-Contact Native American and historic period archaeological resources based upon the environmental setting, conjectural locations of past Native American trails, and the historic settlement pattern of Elizbeth (Geismar 1995).

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The project location was included in a large-scale study for the Hudson-Raritan Estuary Comprehensive Restoration Plan (URS 2014). This study was reconnaissance-level only and did not include subsurface archaeological testing. The project location falls in the Raritan River Planning Region but was not within the buffer area considered for archaeological sensitivity (URS 2014).

An additional broad-based cultural resources survey entitled *Crossroads of the American Revolution, National Heritage Area Management Plan, Part II Implementation Plan* details the Crossroads of the American Revolution's policies, guidelines, actions, and plans for cultural heritage programs to develop a better understanding of the American Revolution in New Jersey (Crossroads of the American Revolution National Heritage Area 2011). Most of the major Revolutionary War events in the vicinity of Elizabeth and Elizabethport took place on the northeast side of the Elizabeth River further east along Elizabeth Avenue, though Hessian troop encampments are attested roughly a quarter mile to the east of the project location (Meyer 1879; Crossroads of the American Revolution National Heritage Area 2011; John Milner Associates, Inc. 2009).

In 2019, Dennis Bertland Associates completed a survey entitled *In Search of the East Jersey Cottage: Early Anglo-Dutch Domestic Architecture in East Jersey* (Dennis Bertland Associates and Richard Veit 2019). In an attempt to investigate the origins and development of the East Jersey Cottage, the survey inventoried over 600 examples of the building form in various counties in New Jersey, including Union County. One resource was identified in close proximity to the project location, the Nathaniel Bonnell House located at 1045 East Jersey Street approximately 300 feet to the east of the project location. No recommendations of eligibility were made (Dennis Bertland Associates and Richard Veit 2019).

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4.0 RESULTS

4.1 Archaeological Reconnaissance

Fieldwork, consisting of pedestrian reconnaissance and subsurface testing, was conducted on March 31, 2021. Pedestrian reconnaissance was conducted to document existing conditions as part of the archaeological sensitivity assessment. Overview photographs showing the project location are included as Plates 4.1 to 4.3 (see also Plate 3.2) and the photograph locations and directions are shown on Figure 4.1. The project location encompasses roughly 12 square feet and is situated adjacent to Boxwood Hall within Block 9, Lot 391 at 1073 East Jersey Street (see Figures 3.2 and 4.1). The project location is within an urbanized area surrounded by residential and commercial properties (see Figures 1.1 and 1.2). Topography slopes gently south toward East Jersey Street and the ground surface is covered by mowed grass lawn and a landscaped garden bed containing flowers and shrubs (see Plates 4.1 and 4.2). At the northwest corner of the project location, an aluminum rain gutter, which runs down from the roof and vertically along the corner of the southwest corner of the Boxwood Hall building, enters the ground through the opening of an approximately 0.45-foot-diameter vertically-placed, buried clay pipe (see Plate 4.2). Personal communication with the Boxwood Hall on-site State Park Service caretaker, Katherine Craig, indicated that the removal of a buried oil tank as well as several tree and shrub plantings have occurred within or in the vicinity of the project location since 1960.

4.2 Assessment of Archaeological Sensitivity

The assessment of archaeological sensitivity considers environmental characteristics of known pre-Contact sites locally and in the region and historic records to identify locations within the project location likely to contain pre-Contact and historic archaeological resources. In areas where no sites are documented, the potential presence of pre-Contact resources is based primarily on topography, availability of lithic and other critical resources, proximity to water, and soil characteristics. The potential presence of historic resources is determined through analysis of historic primary and secondary records and cartographic materials. The proximity of historic transportation routes and valuable natural resources (water, building material, energy sources) also increases the potential for historic sites to be discovered.

Pre-Contact Archaeological Sensitivity

Previous archaeological investigations and regional settlement pattern studies indicate that in New Jersey, and elsewhere in the Middle Atlantic region, areas of well-drained soils near perennial water sources are highly favored locations for pre-Contact sites (Cavallo and Mounier 1982; Chesler 1982; Grossman-Bailey 2001:136; Kinsey 1972; Kraft 1986, 2001; Ranere and Hansell 1985, Stewart 1998; Wall et al. 1996; Walwer and Pagoulatos 1990). Areas closest to freshwater sources are considered zones of highest sensitivity for pre-Contact archaeological resources. Other possible zones of sensitivity for pre-Contact occupation include locations with well-drained soils, level topography, historic trails, and a good vantage point, particularly on drainage divides, and upland areas farther from water that may contain key exploitable technological or subsistence resources (Cavallo and Mounier 1982; Pagoulatos and Walwer 1991).

No pre-Contact sites have been recorded within one mile of the project location. The soils mapped within and surrounding the project location are Urban Land, a miscellaneous category that consists of areas covered by paved surfaces, buildings or structures or land subjected to cutting and filling (NRCS 2021). The project location falls roughly 1,100 feet to the north of the Elizabeth River, and historically, was mapped approximately 300 feet to the east of an unnamed tributary of the Elizabeth River. In its natural state as a terrace overlooking the Elizabeth River and its tributaries, the project location may have been an ideal location for settlement by pre-Contact Native American groups. However, these favorable environmental

Plate 4.1: Overview of the Boxwood Hall building taken from the south side of East Jersey Street.

Photo view: North

Photographer: Nicole M. Herzog

Date: March 31, 2021

Plate 4.2: Close-up view of the project location showing the damaged foundation and the current location of the drainage gutter, marked-out utility, and landscaping elements.

Photo view: Northeast

Photographer: Nicole M. Herzog

Date: March 31, 2021

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Plate 4.3: Structural engineer, Tom Langan, inspecting the extent of damage to the foundation with the drainage gutter, the oil tank pipe, and the copper piping visible to his left.

Photo view: East

Photographer: Nicole M. Herzog

Date: March 31, 2021

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Figure 4.1: Aerial photograph showing the project location, EU-A, and photograph locations and directions (Google Earth Imagery 2020).

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conditions also appealed to the early European settlers, and the intensity and extent of urban historic land use that followed the initial European settlement of the project location is likely to have impacted the potential for it to contain pre-Contact or Contact period Native American resources. Based on the amount of previous historic and modern ground disturbance within the project location caused by the construction of and later alterations to the historic Boxwood Hall building and the installation and removal of associated subsurface utilities, the project location is assessed with low sensitivity for pre-Contact archaeological resources.

Historic Archaeological Sensitivity

Historic archaeological sensitivity, which is based on Colonial, Federal, and Early Industrial period land uses, is ranked as high near documented historic occupation and as low in areas with little record of historic land development. The presence of standing historic structures indicates a high probability for associated historic archaeological sites. Information obtained from cartographic evidence also contributes to assessments of historic site probability. While early historic maps do not depict historic structures with accuracy, nineteenth-century maps often record details of settlement pattern, ownership, and occupation. From an environmental perspective, the factors contributing to pre-Contact sensitivity often apply to early historic sensitivity as well.

A review of eighteenth- to twentieth-century property records, historic maps, atlases, and historic aerial imagery indicated that the present Boxwood Hall building was constructed circa 1750 (see HABS 1970). The early owners of the Boxwood Hall property included a number of prominent figures, most notably, Elias Boudinot, who served as President of the Continental Congress in 1782, and Jonathan Dayton, the youngest signer of the United States Constitution. During the Revolutionary War, the project location was mapped in proximity to Hessian troop encampments and minor skirmishes and raids are known to have occurred frequently within Elizabethtown (Faden 1784; Meyer 1879; Thayer 1964; John Milner Associates, Inc. 2009). Significant alterations were made to Boxwood Hall in 1870, including the demolition of two lateral wings, the exact locations and dimensions of which are not known. Areas of localized ground disturbance were documented in the vicinity of the project location relating to the installation and later removal of an oil storage tank, the subsurface rainwater drainage outlet at the southwest corner of the building, and successive episodes of decorative plantings. Due to the project location's proximity to a standing eighteenth-century structure and the limited and localized nature of prior modern ground disturbance, the project location is assessed with a moderate to high sensitivity for the presence of intact historic period archaeological resources.

4.3 Excavation of EU-A

Subsurface testing included the excavation of a single excavation unit (EU) located along the south elevation of Boxwood Hall, extending south and east from the southwest corner of the foundation. The EU, designated EU-A, measured three feet along its north to south orientation, and four feet parallel along the building's foundation. A datum was established at the southeast corner of EU-A at 0.3 feet above the ground surface. Based on the recommendation of the on-site structural engineer, the EU was terminated at 2.0 feet below ground surface (approximately 2.3 feet below datum) as it was a sufficient depth to inspect the exterior of the building foundation.

The first stratum encountered in EU-A consisted of an approximately 0.7-foot-thick redeposited soil layer (Fill 1) comprised of dark reddish brown (5YR 2.5/2) silt loam with 30 percent rock inclusions. It was underlain by a second redeposited soil layer (Fill 2) and Features 1 and 2. Fill 1 contained a total of 93 historic artifacts; an additional 67 items including plastic, coal, and brick fragments, and modern nails were not retained. The retained artifacts include a fragment of a tobacco pipe stem (n=1), window glass (n=13), brick (n=2), coal (n=2), coal ash (n=2), redware (n=2), twentieth-century vessel glass (n=8), a metal screw (n=1), and a large number of wire nails (n=62). Fill 1 also contained two lengths of three-quarter-inch copper piping and a trench containing a 5.0-inch-diameter steel oil pipe. The pipes were encountered extending roughly north to south through the center of the EU and

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the pipe trench extended to a depth of approximately 1.35 feet below datum. (Plate 4.4). Based on the presence of coal, coal ash, twentieth-century glass, and wire nails, Fill 1 likely dates from the late nineteenth to twentieth century.

Feature 1 was a basin-shaped pit that consisted of dark brown (10YR 3/3) silt loam and contained roots throughout. It was located in the southwest corner of the EU, and extended into the unit's southern wall (Plate 4.5). Feature 1 was first observed at 1.15 feet below datum and terminated at approximately 1.7 feet below datum. However, upon inspection of the southern wall of the EU, it was apparent that Feature 1 originated near the ground surface and extended through Fill 1. Feature 1 extended into Fill 2, undercutting the overlying pipe trench and steel oil pipe, and extended into the western wall of the EU (Plate 4.6). A total of 30 non-diagnostic artifacts was recovered from Feature 1, including small fragments of window glass (n=3), aqua (n=2) and milk glass (n=1) vessel fragments, brick (n=3), ferrous metal (n=2), coal (n=15) and coal ash (n=4). Due to the presence of roots throughout the feature, and the fact that its location corresponds to the previous planting of a Canadian Hemlock, Feature 1 is likely related to late twentieth-century landscaping activities (Forest and Parks Section 1959).

Feature 2 was a cylinder-shaped pit located in the northwest corner of EU-A which was associated with a buried downspout at the southwest corner of Boxwood Hall. The fill contained within Feature 2 consisted of a reddish brown (2.5 YR 5/4) compact silty clay loam that surrounded the clay-pipe-sleeved rain gutter outlet that runs vertically below grade (Plate 4.7). This feature was identified at the base of Fill 1 at an elevation of approximately 1.1 feet below datum. Feature 2 continued below the final excavated depth of the surrounding fill (Fill 2), which was terminated at approximately 2.3 feet below datum. Due to the modern association of the feature and at the recommendation of the structural engineer, Feature 2 was not excavated. The location and soil characteristics of the fill suggest that Feature 2 represents an installation trough and packing material to support the modern rainwater runoff system consisting of the clay pipe and aluminum gutter (see Plates 4.2 to 4.4 and 4.6 to 4.8).

Fill 2 was the second stratum encountered in EU-A and consisted of an approximately 1.0-foot-thick layer of reddish brown (5YR 4/4) loamy sand containing 70 percent pebble-sized rock inclusions (see Plates 4.4 to 4.6). Fill 2 was excavated to approximately 2.0 feet below ground surface (2.3 feet below datum) at which point the soil transitioned to a reddish-brown (5YR 4/4) silty loam, designated Fill 3. Large amounts of shell (n=54) were recovered from Fill 2 and appeared to originate from the eroding material used in the mortaring/filling of the stone foundation that forms the northern profile of EU-A. A total of 17 additional historic artifacts were recovered from Fill 2, including wire nails (n=2), an iron screw (n=1), window glass (n=3), a fragment of a tobacco pipestem (n=1), redware (n=1), creamware (n=1), Albany slip stoneware (n=2), white salt-glazed stoneware (n=1), tin-glazed earthenware (n=2), faunal bone (n=2), and coal (n=1) (see Appendix C). The recovered artifacts include several ceramic fragments with dates spanning the seventeenth and eighteenth centuries, in addition to wire nails which typically date to after 1879 (Figure 4.2). Given the mid-eighteenth-century construction date of the house, and because the relative dates assigned to the material of the overlying stratum (Fill 1) begin during the late nineteenth century, Fill 2 likely represents a mixed or disturbed context dating from the eighteenth through late nineteenth century.

Fill 3 underlay Fill 2 and was marked by a transition in soil texture and composition, from a loamy sand to a fine silty loam. This transition was encountered at 2.3 feet below datum (2.0 feet below ground surface) where it was determined that the building foundation had been sufficiently exposed, and excavation was terminated at the direction of the on-site structural engineer (Plate 4.8). As a result, Fill 3 was not excavated.

Feature 3 consists of the stone and wooden components of the foundation and internal framing at the southwest corner of Boxwood Hall, and comprises the north profile of EU-A. The two samples retained from this feature, a fragment of wood and a fragment of mortar, were removed from the interior space of the foundation between the stones and wooden framing during the examination by Structural Engineer Thomas Langan and Registered Architect Richard Lees (see Plate 4.3, 4.7 and

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Plate 4.4: Excavation of EU-A in progress showing Feature 1 and the trench for the oil tank pipe.

Photo view: Northeast

Photographer: Nicole M. Herzog

Date: March 31, 2021

Plate 4.5: View of the south wall of EU-A showing Feature 1 in profile and the oil tank pipe and copper piping that run through the center of the unit.

Photo view: Southwest

Photographer: Nicole M. Herzog

Date: March 31, 2021

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Plate 4.6: Plan view of EU-A showing the full extent of the excavated Feature 1 and the top of the Fill 2 stratum.

Photo view: Northeast

Photographer: Nicole M. Herzog

Date: March 31, 2021

Plate 4.7: Closing view of EU-A showing the lower courses of the Boxwood Hall foundation to the north (top), the unexcavated drainage pipe packing, Feature 3, to the northwest (top left), and the copper and oil tank piping (center).

Photo view: Northeast

Photographer: Nicole M. Herzog

Date: March 31, 2021

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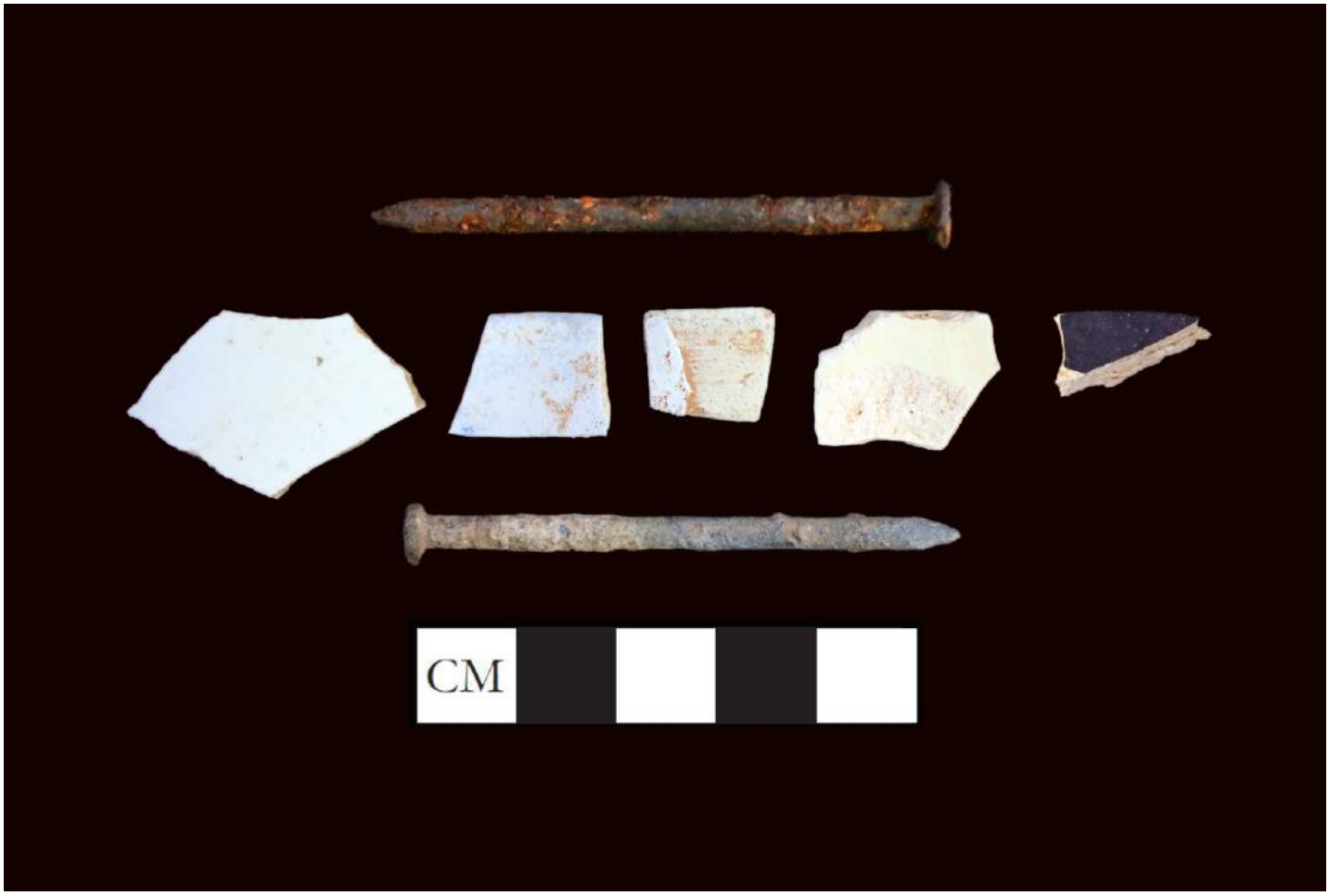

Key to artifacts:
Top Row: Ferrous wire nail.

Middle Left to Right: White Salt-Glazed Stoneware hollowware; Tin-Glazed Earthenware hollowware (n=2); Creamware body sherd; American Stoneware dark brown Albany-type slipped body sherd.

Bottom Row: Ferrous wire nail.

Figure 4.2: Representative artifacts from Fill 2 of EU-A, Cat. #2.

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Plate 4.8: View of the north wall profile of EU-A showing the lower courses of the Boxwood Hall foundation to the north, the unexcavated drainage pipe packing, Feature 3 (left), and the copper and oil tank piping.

Photo view: Northeast

Photographer: Nicole M. Herzog

Date: March 31, 2021

EXHIBIT 'C'

4.8). As was noted in Section 3.3 of this report, a series of significant structural improvements were completed on Boxwood Hall in 1942-1943. It was not clear if the artifacts recovered from EU-A are associated with the original construction of the eighteenth-century structure or are related to the twentieth-century renovations.

Boxwood Hall Site (28-Un-56)

A NJSM archaeological site registration form was completed for the Boxwood Hall site (28-Un-56), a historic archaeological site encompassing the existing NHL, NJR- and NRHP-listed Boxwood Hall property. The form was submitted to Greg Lattanzi at the NJSM on May 5, 2021 and a site number was returned by Mr. Lattanzi on May 10, 2021. The site registration form is on file at the NJSM and is appended hereto (Appendix D; Figure 4.3).

The entire Boxwood Hall property (Block 9, Lot 391 at 1073 East Jersey Street) was defined as the Boxwood Hall archaeological site (28-Un-56) as a result of the present archaeological survey. The Boxwood Hall site area measures 0.396 acres in area, and is approximately 250 feet north-south by 70 feet east-west with a rectilinear shape (see Figure 4.3). The archaeological testing conducted as a part of the current survey was limited to a 12-square-foot area and a total of 193 historic artifacts was recovered (see Appendix C). Artifact manufacture dates begin potentially as early as the seventeenth or eighteenth century, based on the presence of one sherd of creamware (1762-1820), one sherd of white salt-glazed stoneware (1720-1785), and two sherds of tin-glazed earthenware (1628-1793). Potential nineteenth-century artifacts from the same context include two sherds of Albany slip stoneware (1805-1940) and two wire cut nails (1879-present). The earliest artifacts may be associated with the occupation of Boxwood Hall during the NHL's period of significance, circa 1750 to 1824. There is high potential for intact archaeological deposits or the remains of historic-period cultural features elsewhere on the property due to the limited degree of recent ground disturbance on the property. Such information could contribute to the significance of the NHL, NRHP-, and NJR-listed Boxwood Hall.

EXHIBIT 'C'

Figure 4.3: Aerial photograph showing the project location and the Boxwood Hall site (28-Un-56) (Google Earth Imagery 2020).

EXHIBIT 'C'

5.0 CONCLUSIONS AND RECOMMENDATIONS

Richard Grubb & Associates, Inc. (RGA) completed an archaeological survey as part of proposed rehabilitation of the Boxwood Hall foundation located within Block 9, Lot 391 at 1073 East Jersey Street in the City of Elizabeth, Union County, New Jersey. The proposed project required the removal of soil to expose a portion of the Boxwood Hall foundation for assessment by a structural engineer in advance of a proposed structural repair program. The project location was confined to a 12-square-foot excavation unit (EU) situated adjacent to the building foundation at the southwest corner of Boxwood Hall. The proposed building rehabilitation project is publicly funded, and therefore, required an archaeological survey for review by the New Jersey Historic Preservation Office (NJHPO) as set forth by the New Jersey Register of Historic Places Act (NJAC 7:4). The purpose of the archaeological survey was to identify the presence or absence of potentially significant pre-Contact Native American and/or historic archaeological resources within the project location that may contribute to the significance of Boxwood Hall, and to make recommendations for further survey, if warranted. The Boxwood Hall property is a National Historic Landmark (NHL: 11/28/1972) and is listed in the National and State Registers of Historic Places (NR: 12/18/1970; SR 5/27/1971).

Based on background research, the Boxwood Hall property has been continually occupied since the mid- to late eighteenth century. The historic development of the site, which included agricultural land use, the construction of the dwelling and associated outbuildings, and subsequent alterations and improvements to the property's buildings and associated utilities, is likely to have significantly impacted the project location's potential to contain significant pre-Contact Native American archaeological resources. Therefore, the project location was assessed as having low sensitivity for intact pre-Contact Native American archaeological resources. Pedestrian reconnaissance of the site revealed localized areas of recent disturbance within or in proximity to the project location, specifically recent landscaping, below-ground rainwater drainage, electric utility wiring, and a paved driveway running along the west side of the building. The remainder of the project location appeared generally undisturbed. The proximity of the project location to the building's foundation increases the likelihood of encountering historic period cultural features or deposits associated with the construction and early use of the building. Based on the development history of the property and the limited nature of nearby ground disturbance, the project location was considered to have moderate to high sensitivity for historic period archaeological resources.

Subsurface testing of the project location consisted of a three-foot by four-foot EU (EU-A) located at the southwest corner of Boxwood Hall. The excavation resulted in the identification of two redeposited fills and two features associated with recent landscaping and the extant rainwater drainage system. The archaeological testing yielded a total of 196 historic period artifacts. The recovered artifacts, which include wire nails, brick, coal, various types of glass fragments, ceramic, miscellaneous ferrous metal, and shell, suggest that the uppermost fill represents disturbed topsoil associated with the twentieth-century use of the property, which included landscaping activities and the installation of a buried pipe associated with an underground heating oil tank. Several ceramics with dates spanning the seventeenth and eighteenth centuries were found within the underlying fill, Fill 2, suggesting that the material was deposited during Boxwood Hall's early history. However, two wire nails, which typically date to after 1879, were also recovered from this context, indicating that Fill 2 may represent earlier redeposited soil or a previously intact eighteenth-century deposit subsequently disturbed during the late nineteenth century (see Appendix C). Excavation was terminated at 2.0 feet below ground surface, as determined by the on-site structural engineer.

No builder's trenches, other intact cultural features, or discrete, intact artifact deposits associated with the period of significance of Boxwood Hall (circa 1750 to 1824) were identified during archaeological testing. However, a stratum (Fill 2) that contained eighteenth- and early nineteenth-century material was identified. While it was impacted by later activity on the property, it is possible that intact deposits associated with the early history of the

house and its construction may be present elsewhere on the property. The area tested was disturbed by plantings and utility and rainwater distribution installation. While no intact builder's trenches were identified within the confined area of the EU, likely due to later disturbance, it is possible that builder's trenches may be present elsewhere around the foundation. In addition, intact deposits or features may be present below the depth of excavation (2.0 feet). Due to these factors, additional archaeological testing in the form of EUs is recommended prior to the implementation of a foundation repair program in locations where excavation on the exterior of Boxwood Hall is required. As a result of this archaeological survey, the Boxwood Hall site (28-Un-56) was identified and registered with the New Jersey State Museum.

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EXHIBIT 'C'

APPENDIX A: QUALIFICATIONS OF THE PRINCIPAL INVESTIGATOR

EXHIBIT 'C'

CULTURAL RESOURCE CONSULTANTS

NICOLE M. HERZOG
ARCHAEOLOGIST (36 CFR 61)

YEARS OF EXPERIENCE:
With this firm:
2020-Present
With other firms: 2

EDUCATION:
Ph.D. Candidate
Eberhard Karls
Universität Tübingen
Near Eastern
Archaeology

M.A. 2014
University of Chicago
Social Sciences/
Archaeology

B.A. 2012
The University of Texas
at Austin
Anthropology and
Classical Archaeology

PROFESSIONAL TRAINING:
40-hour Hazardous Waste Operations and Emergency Response (OSHA 29 CFR 1910.120), July 2020; NJ Transit Contractor Safety/RWP Training, September 2020.

PROFESSIONAL SOCIETIES:
Archaeological Society of New Jersey (ASNJ), American Schools of Oriental Research (ASOR)

Professional Experience Summary:

Nicole M. Herzog is an Archaeologist at RGA with experience conducting archaeological field investigations for Phase I, II and III archaeological projects in New Jersey, Pennsylvania, Washington D.C., New Hampshire, North Dakota, Delaware, and New Mexico. Ms. Herzog's experience includes in-field and laboratory artifact analysis and processing, and report writing. She has participated in cultural resources surveys prepared in accordance with Section 106 of the National Historic Preservation Act, NEPA, and various municipal and state cultural resource regulations.

Representative Project Experience:

Monroe Source Point, Monroe Township, Bradford County, PA (Sponsor: JHA Companies) Principal Investigator of Phase I archaeological survey performed for a proposed surface water withdrawal along the Towanda River. The survey was requested by PA SHPO due to the area's high probability for pre-Contact archaeological resources. A preliminary examination of CRGIS indicates that three pre-Contact archaeological sites and one historic archaeological site are mapped within one mile. A total of sixty-four (64) shovel test pits were excavated. Subsurface testing identified one isolated prehistoric flake and a very low-density scatter of nineteenth- through twentieth-century historic artifacts. None of the identified cultural material is considered to be potentially significant archaeological resources, and no further survey was recommended. The Pennsylvania State Historic Preservation Office concurred with the recommendation.

Confidential Energy Project, Susquehanna County, PA (Sponsor: Confidential Client) Co-Principal Investigator for a Phase I archaeological survey for the expansion of an HP Gas Cooling system at a natural gas compressor station facility in northeastern Pennsylvania. RGA reviewed background research via PA SHPO's on line files and archaeological fieldwork to identify the presence or absence of archaeological sites. A list of consulting parties, including federally recognized tribes, was developed. The survey was performed in accordance with Section 106 and Federal Energy Regulatory Commission (FERC) guidelines.

New Jersey American Water, Jumping Brook Water Treatment Plant Site, Neptune Township, Monmouth County, NJ (Sponsor: Brinkerhoff Environmental) Co-Principal Investigator for the Phase IA historical and archaeological survey to assess the archaeological sensitivity of a property for proposed upgrades to the existing water treatment plant site. Areas of archaeological and historical sensitivity were identified and delineated. This survey was performed in accordance with the archaeological guidelines of the NJ Historic Preservation Office and in compliance with the Freshwater Wetlands Protection Act (Section 7:7A).

Schaechter Farm Stream Habitat Improvements, Rumney, Grafton County, NH (Sponsor: USDA-NRCS) Archaeologist and report author for the Phase IB archaeological survey performed on behalf of the USDA Natural Resource Conservation Service (USDA-NRCS) for proposed stream habitat improvements. Twenty-three (23) shovel test pits were excavated along a linear transect at 8-meter intervals within the project's Area of Potential Effects (APE). The archaeological investigation did not identify any potentially significant Pre-Contact or historic period archaeological resources within the APE. No additional archaeological survey was recommended. Under Section 106, a finding of No Effect on historic properties is also recommended. The New Hampshire Division of Historical Resources concurred with the recommendation.

EXHIBIT 'C'

APPENDIX B: SUMMARY OF NATIONAL REGISTER CRITERIA

New Jersey and National Registers of Historic Places Criteria

Significant historic properties include districts, structures, objects, or sites that are at least 50 years of age and meet at least one National Register criterion. Criteria used in the evaluation process are specified in the Code of Federal Regulations, Title 36, Part 60, National Register of Historic Places (36 CFR 60.4). To be eligible for inclusion in the National Register of Historic Places, a historic property(s) must possess:

> the quality of significance in American History, architecture, archaeology, engineering, and culture [that] is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

a) that are associated with events that have made a significant contribution to the broad patterns of our history, or

b) that are associated with the lives of persons significant in our past, or

c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components lack individual distinction, or

d) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

There are several criteria considerations. Ordinarily, cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register of Historic Places. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a) a religious property deriving primary significance from architectural or artistic distinction or historical importance, or

b) a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event, or

c) a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his/her productive life, or

d) a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or

e) a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or

f) a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historic significance, or

EXHIBIT 'C'

g) a property achieving significance within the past 50 years if it is of exceptional importance. (36 CFR 60.4)

When conducting National Register evaluations, the physical characteristics and historic significance of the overall property are examined. While a property in its entirety may be considered eligible based on Criteria A, B, C, and/or D, specific data is also required for individual components therein based on date, function, history, and physical characteristics, and other information. Resources that do not relate in a significant way to the overall property may contribute if they independently meet the National Register criteria.

A contributing building, site, structure, or object adds to the historic architectural qualities, historic associations, or archeological values for which a property is significant because a) it was present during the period of significance, and possesses historic integrity reflecting its character at that time or is capable of yielding important information about the period, or b) it independently meets the National Register criteria. A non-contributing building, site, structure, or object does not add to the historic architectural qualities, historic associations, or archeological values for which a property is significant because a) it was not present during the period of significance, b) due to alterations, disturbances, additions, or other changes, it no longer possesses historic integrity reflecting its character at that time or is incapable of yielding important information about the period, or c) it does not independently meet the National Register criteria.

EXHIBIT 'C'

APPENDIX C: ARTIFACT CATALOG

EXHIBIT 'C'

APPENDIX C: ARTIFACT CATALOG

BAG #	Context	Level	Depth*	Stratum	Count	Group	Artifact Material	Artifact Class	Arifact Type	Description	Measurements/ Dates	Weight (g)
1	EU A	1	0.4-1.1	Fill 1	10	ARCH	Glass	Flat	Window	Aqua-tinted, various sized small shards		
1	EU A	1	0.4-1.1	Fill 1	3	DOM	Glass	Vessel	Indeterminate Vessel	Colorless, flat, not enough to determine manufacture technique, probably multiple vessels represented, probably window shards		
1	EU A	1	0.4-1.1	Fill 1	4	DOM	Glass	Vessel	Indeterminate Vessel	Colorless, solarized, flat, not enough to determine manufacture technique, probably multiple vessels represented, probably window shards	Pre-1915 (Lindsey 2020a)	
1	EU A	1	0.4-1.1	Fill 1	1	DOM	Glass	Vessel	Bottle	Amber, body shard, slightly curved, too tiny to determine manufacture technique		
1	EU A	1	0.4-1.1	Fill 1	1	DOM	Glass	Vessel	Bottle	Amber, body shard, machine made, exterior has completely stippled surface, slightly curved, small	Early 20th Century-present (Lindsey 2020b)	
1	EU A	1	0.4-1.1	Fill 1	2	DOM	Glass	Vessel	Bottle/Jar	Colorless, body shards, slightly curved, too small to determine manufacture technique, one a bit charred due to burning		
1	EU A	1	0.4-1.1	Fill 1	1	DOM	Ceramic	Redware	Hollowware	Body sherd, brown lead glaze on both sides, slightly curved, small		
1	EU A	1	0.4-1.1	Fill 1	1	DOM	Ceramic	Redware	Indeterminate Form	Body sherd, no visible decorations, slightly curved, tiny		
1	EU A	1	0.4-1.1	Fill 1	1	TOB	White Clay	Tobacco Pipe	Pipe Stem	Small fragment, broken off on both sides	5/64" Bore D.	
1	EU A	1	0.4-1.1	Fill 1	2	ARCH	Red Clay	Fired Clay	Brick	Red, small fragments, one heavily weathered, Sampled		7.3
1	EU A	1	0.4-1.1	Fill 1	2	FUEL	Coal	Coal	Coal	Black, small fragments, Sampled		2.9
1	EU A	1	0.4-1.1	Fill 1	2	FUEL	Coal Ash	Coal Ash	Coal Ash	White and red, small fragments		2.4
1	EU A	1	0.4-1.1	Fill 1	1	HRDW	Ferrous Metal	Fastener	Screw	Head and shaft fragment, very corroded		
1	EU A	1	0.4-1.1	Fill 1	3	ARCH	Ferrous Metal	Nail	Indeterminate Nail	Shaft fragments, heavily corroded over		
1	EU A	1	0.4-1.1	Fill 1	13	ARCH	Ferrous Metal	Nail	Wire Nail	Shaft fragments, very corroded	1879-present (Wells 1998:92)	
1	EU A	1	0.4-1.1	Fill 1	20	ARCH	Ferrous Metal	Nail	Wire Nail	Head and shaft fragments, very corroded	1879-present (Wells 1998:92)	
1	EU A	1	0.4-1.1	Fill 1	1	ARCH	Ferrous Metal	Nail	Wire Nail	Complete, very corroded, 8d	2.5" L. 1879-present (Wells 1998:92)	
1	EU A	1	0.4-1.1	Fill 1	1	ARCH	Ferrous Metal	Nail	Wire Nail	Complete, very corroded, 20d	4" L. 1879-present (Wells 1998:92)	
1	EU A	1	0.4-1.1	Fill 1	6	ARCH	Ferrous Metal	Nail	Wire Nail	Complete, roofing nails, very corroded, 3d	1.25" L. 1879-present (Wells 1998:92)	
1	EU A	1	0.4-1.1	Fill 1	18	ARCH	Ferrous Metal	Nail	Wire Nail	Complete, various states of corrosion, 6d	2" L. 1879-present (Wells 1998:92)	
2	EU A	2	1.1-2.1	Fill 2	2	ARCH	Ferrous Metal	Nail	Wire Nail	Complete, only slightly corroded, 6d	2" L. 1879-present (Wells 1998:92)	
2	EU A	2	1.1-2.1	Fill 2	3	ARCH	Glass	Flat	Window	Aqua-tinted, various sized tiny shards		

EXHIBIT 'C'

BAG #	Context	Level	Depth*	Stratum	Count	Group	Artifact Material	Artifact Class	Arifact Type	Description	Measurements/ Dates	Weight (g)
2	EU A	2	1.1-2.1	Fill 2	1	DOM	Ceramic	Redware	Indeterminate Form	Body sherd, one side red/brown lead glaze, the other side spalled, very tiny		
2	EU A	2	1.1-2.1	Fill 2	1	DOM	Ceramic	Creamware	Indeterminate Form	Body sherd, exterior spalled, interior no visible decorations, slightly curved small	1762-1820 (Miller et al 2000:12)	
2	EU A	2	1.1-2.1	Fill 2	2	DOM	Ceramic	Stoneware	Indeterminate Form	Body sherds, buff bodied, Albany slip interior, exterior spalled, very tiny, possibly multiple vessels represented	1805-1940 (Miller et al 2000:10; Azizi et al 1996)	
2	EU A	2	1.1-2.1	Fill 2	1	DOM	Ceramic	White Salt-Glazed Stoneware	Hollowware	Body sherd, slightly curved, no visible decorations, small	1720-1785 (MACL 2015)	
2	EU A	2	1.1-2.1	Fill 2	2	DOM	Ceramic	Tin-Glazed Earthenware	Hollowware	Body/rim sherds, mended, exterior mostly spalled, pale blue enamel interior, possible a speck of blue decoration on interior, but cannot confirm, looks slightly burnt	1628-1793 (Shlasko 1989)	
2	EU A	2	1.1-2.1	Fill 2	1	TOB	White Clay	Tobacco Pipe	Pipe Stem	Half a stem broken off on either side, cannot get accurate bore diameter		
2	EU A	2	1.1-2.1	Fill 2	1	HRDW	Ferrous Metal	Fastener	Screw	Head and shaft fragment, very corroded		
2	EU A	2	1.1-2.1	Fill 2	1	FUEL	Coal	Coal	Coal	Black, small fragment		4.4
2	EU A	2	1.1-2.1	Fill 2	2	BIO	Faunal	Bone	Mammal	Unidentified, calcine bone fragments, small		3.5
2	EU A	2	1.1-2.1	Fill 2	1	BIO	Faunal	Shell	Hard Clam	Tiny fragment, weathered, a bit charred		0.5
2	EU A	2	1.1-2.1	Fill 2	53	BIO	Faunal	Shell	Oyster	Various sized small fragments, all in various states of weathering and decay, many greyed due to charring, one hinge fragment		52.1
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	3	ARCH	Glass	Flat	Window	Aqua-tinted, various sized small to tiny shards		
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	2	DOM	Glass	Vessel	Bottle/Jar	Aqua, body shards, slightly curved, too small to determine manufacture technique, multiple vessels represented		
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	1	DOM	Glass	Vessel	Indeterminate Vessel	Milk glass, body shard, thin, slightly curved, to small to determine manufacture technique, could be a DOM or LIGHT item		
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	2	ARCH	Red Clay	Fired Clay	Brick	One red, one orange, various sized small fragments		7.4
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	1	MISC	Ferrous Metal	Miscellaneous Metal	Indeterminate Metal Item	Small blob of metal, heavily corroded		
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	3	FUEL	Coal Ash	Coal Ash	Coal Ash	Tan and grey, various sized small fragments		10.1
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	14	FUEL	Coal	Coal	Coal	Black, various sized fragments, Sampled		36.8
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	1	FUEL	Coal	Coal	Coal	Black, small fragment, From Soil Sample		4.4
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	1	FUEL	Coal Ash	Coal Ash	Coal Ash	Grey and brown, tiny fragment, From Soil Sample		0.3

EXHIBIT 'C'

BAG #	Context	Level	Depth*	Stratum	Count	Group	Artifact Material	Artifact Class	Arifact Type	Description	Measurements/ Dates	Weight (g)
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	1	MISC	Ferrous Metal	Miscellaneous Metal	Indeterminate Metal Item	Flat, broken on all sides, small, heavily corroded fragment, From Soil Sample		
3	EU A	1	1.15-2.7	Fea. 1 Fill 1	1	ARCH	Red Clay	Fired Clay	Brick	Orange, tiny fragment, From Soil Sample		0.7
4	Boxwood Hall Foundation	1			1	ARCH	Composite	Mortar	Mortar	White, large fragment		144.6
4	Boxwood Hall Foundation	1			1	MISC	Wood	Wood	Miscellaneous Wood	Unidentified wood fragment, probably building material, probably plank or brace, uncharred		43.3
Total Artifacts:					***196***							

Key:

* in decimalized feet below datum

ARCH = architectural
BIO = biological
DOM = domestic
FUEL = fuel
HRDW = hardware
LIGHT = lighting
MISC = miscellaneous
TOB = tobacco

EU = excavation unit
g = grams
L = length
D = diameter

EXHIBIT 'C'

APPENDIX C: ARTIFACT CATALOG REFERENCES

Azizi, Sharla, Diane Dallal, Mallory A. Gordon, Meta F. Janowitz, Nadia N.S. Maczaj, Marie-Lorraine Pipes.
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Wells, Tom
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EXHIBIT 'C'

APPENDIX D: NEW JERSEY STATE MUSEUM ARCHAEOLOGICAL SITE FORM

EXHIBIT 'C'

NEW JERSEY STATE MUSEUM
ARCHAEOLOGICAL SITE REGISTRATION PROGRAM
BUREAU OF ARCHAEOLOGY AND ETHNOLOGY
P.O. BOX 530, TRENTON, N.J. 08625-0530
Phone (609) 292-8594; Fax (609) 292-7636

Site Name: Boxwood Hall Site **SITE #:** 28-Un-56
Date: 5/5/2021

☒ Check this box if you prefer to have this site information restricted to professional archaeologists, academics and environmental researchers conducting project background research. If so, this form will be considered donated information according to New Jersey State Law.

NJ State Plane Coordinates: NJSP X Coordinate 572,599.25
NJSP Y Coordinate 666,949.00

USGS 7.5 Minute Series Quad.: Elizabeth, NJ
State Plane Coordinates:
UTM Coordinates (required): E 566,783.400 N 4,501,766.010

County: Union **Township:** City of Elizabeth

Location (descriptive): Located at 1073 East Jersey Street, along the north side of East Jersey Street between the intersections of East Jersey Street and Catherine Street and Madison Avenue.

Survey Methodology (Phase IA) Phase II (Phase IB) Phase III

Period of Site: Eighteenth to twentieth century

Cultural Affiliation(s) (if known): European-American, American

Owner's (Tenant's) Name: The State of New Jersey
Address 1069-1073 East Jersey Street, Elizabeth, NJ 07201
Phone:
Attitude Toward Preservation:

Surface Features: Timber frame building situated within a flat open yard, surrounded by late nineteenth- to twenty-first-century urban features, including paved roads, concrete sidewalks, above- and below-ground utilities, and residential and commercial properties.

Prominent Landmarks: Standing circa 1750 Elias Boudinot House.

Vegetation Cover: Manicured lawn and assorted shrub plantings.

Nearest Water Source: Elizabeth River **Distance:** 1,100 feet

Soil Type: Urban Land (UR) **Erosion:** None

Stratified (if known):

Threat of Destruction (if known): Proposed structural repairs to the Boxwood Hall foundation.

Previous Work and References (list below):

	Name	Date	Reference (n/a if unpublished)
1.	Historic American Buildings Survey	1970	HABS NJ-476, Boudinot Mansion, 1073 East Jersey Avenue, Elizabeth, Union County, NJ
2.	Janet Foster & John Patton Graham	1986	Union County Historic Sites Inventory: Elizabeth City.
3.	Richard Grubb & Associates, Inc.	2021	Archaeological Survey, Boxwood Hall, 1073 East Jersey Street, City of Elizabeth, Union County, New Jersey.

Collections:

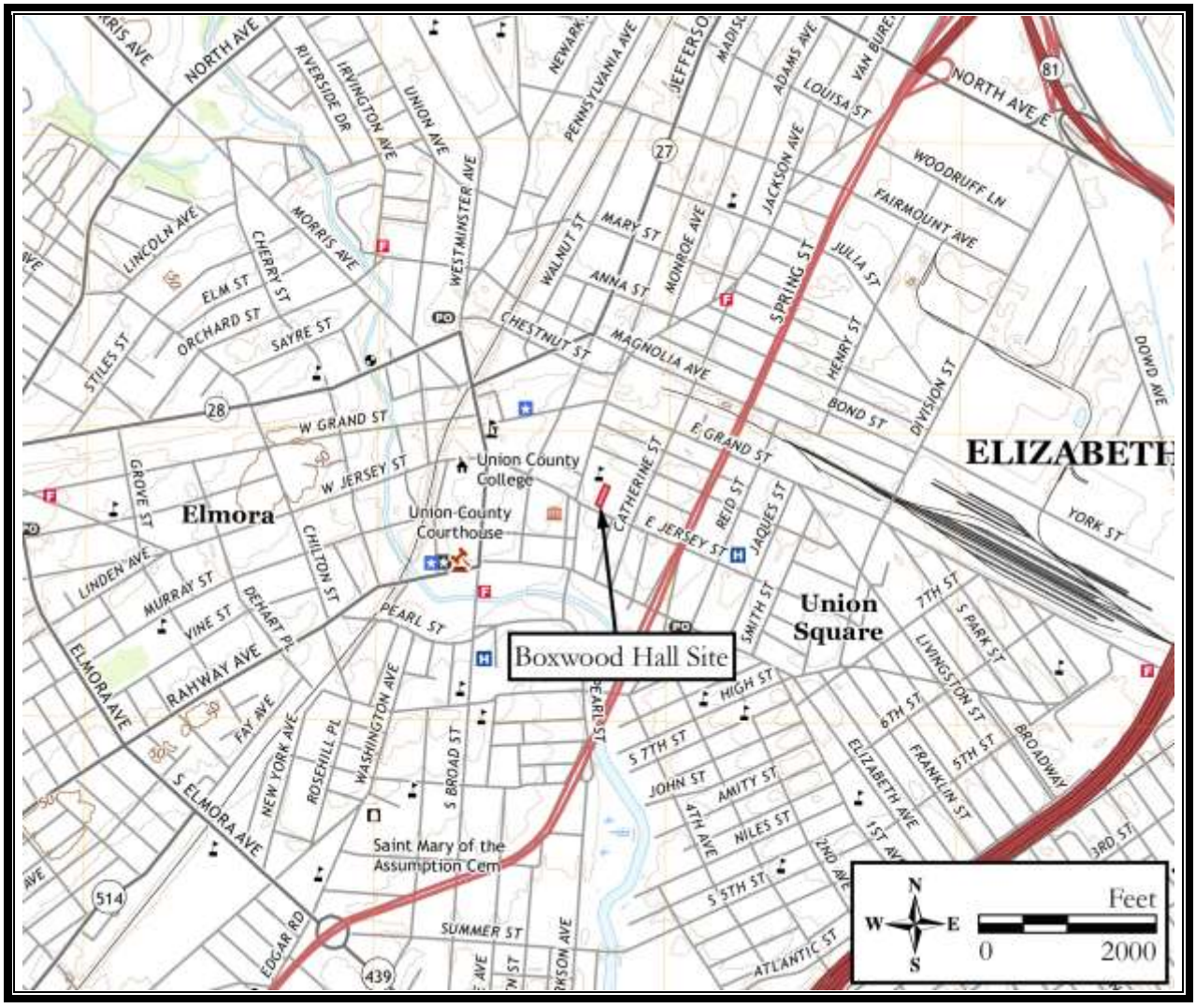
	Name	Date	Collection Stored	Previous Designation
1.	Richard Grubb & Associates, Inc.	2021	259 Prospect Plains Road, Building D, Cranbury, NJ 08512	

EXHIBIT 'C'

Sketch Map of the Site:

Indicate the chief topological features, such as streams, swamps, shorelines, and elevations (approximate). Also show buildings and roads. Indicate the site location by enclosing the site area with a dotted line. Use a scale (approximate) to indicate distance and dimensions.

North



Scale: 1" = 2000'

Observations, Remarks, or Recommendations:

Richard Grubb & Associates completed an archaeological survey in advance of an assessment of damage to the Boxwood Hall foundation. This project required the removal of soil in an area measuring three by four feet along the southwest corner of the foundation and limited to a depth of two feet, as determined by the structural engineer. The Boxwood Hall property is a National Historic Landmark (NHL: 11/28/1972) and listed in the National and State Registers of Historic Places (NR: 12/18/1970; SR 5/27/1971). Boxwood Hall, also known as the Elias Boudinot House, is a five-bay, middle-Georgian wooden structure with a tripartite Palladian window. In its original configuration, the house had two lateral wings bringing the number of rooms to 18. Boxwood Hall was built circa 1750 by Samuel Woodruff, the Mayor of Elizabethtown. Elias Boudinot lived at the house from 1772 to 1795. Boudinot was a member of the Continental Congress and served as the President of Congress in 1782-1783.

A review of historic maps and aerial photographs, and secondary source histories of the Boxwood Hall property documented episodes of significant but localized ground disturbance associated with the construction of the Boxwood Hall dwelling and outbuildings in the mid-eighteenth century, as well as subsequent alterations made to the buildings and/or property including: the demolition of the original lateral wings and addition of a rear wing around 1870; the removal of the rear wing during restoration in 1942; and the installation and removal of an oil storage tank from the front yard. However, the project location appears to be minimally impacted by these documented disturbances during pedestrian reconnaissance.

EXHIBIT 'C'

Site Name: Boxwood Hall Site **SITE #:** 28-Un-56

Observations, Remarks, or Recommendations (continued):
The 12-square foot excavation unit revealed two deposited fills and two features associated with recent landscaping and the present rainwater drainage system. A total of 196 historic period artifacts was recovered during testing. The recovered artifacts suggest that the uppermost fill represents disturbed topsoil associated with twentieth-century use of the property. The underlying fill contained ceramics (creamware, Albany slip stoneware, white salt-glazed stoneware, and tin-glazed earthenware) with manufacturing dates spanning the seventeenth to eighteenth century and alongside wire nails that typically date after 1879, suggesting that the underlying fill may represent earlier redeposited soil or a previously intact eighteenth-century deposit subsequently disturbed during the nineteenth century. No intact archaeological deposits or cultural features were identified as part of the archaeological testing.

Recorder's Name (Company): Nicole M. Herzog (Richard Grubb & Associates, Inc.)
Address: 259 Prospect Plains Road, Cranbury, NJ 08512
Phone: 609-619-7300
Date Recorder at Site: March 31, 2021 *Revised 2007*

EXHIBIT 'C'

Site Map
Site Name: Boxwood Hall Site; SITE #: 28-Un-56

EXHIBIT 'C'

APPENDIX E: ANNOTATED BIBLIOGRAPHY

Authors:	Nicole M. Herzog and Jason Shellenhamer
Title:	Archaeological Survey, Boxwood Hall, 1073 East Jersey Street, City of Elizabeth, Union County, New Jersey
Date:	May 2021
RGA Project No.:	2021-082
RGA Database Title:	State of NJ Boxwood Hall Archaeology
State:	New Jersey
County:	Union
Municipality:	City of Elizabeth
Drainage Basin:	Elizabeth River, Arthur Kill, Raritan Bay, Atlantic Ocean
U.S.G.S. Quad:	Elizabeth, NJ
Regulation:	New Jersey Register of Historic Places Act (N.J.A.C. 7:4)
Project Type:	Government: Building Rehabilitation
Project Sponsor:	State of New Jersey
Client:	New Jersey State Park Service (NJDEP)
Level of Survey:	Archaeological Survey
Cultural Resources:	National Historic Landmark and NRHP- and NJR-listed Boxwood Hall (NHL: 11/28/1972; NR: 12/18/1970; SR 5/27/1971); Boxwood Hall Site (28-Un-56)

EXHIBIT 'C'

APPENDIX “C”

Window Repair Estimate

And

Structural Rehabilitation and Repair Estimate

EXHIBIT 'C'

WINDOW / DOOR REHABILITATION
HISTORIC BOXWOOD HALL RESIDENCE, ELIZABETH NJ
CONSTRUCTION COST ESTIMATE

ITEM	QUAN.	UNIT AMOUNT		TOTAL	
		LABOR	TOTAL	LABOR	TOTAL
WINDOWS / DOOR					
MOBILIZATION & DEMOBILIZATION /L.S.	1.00	$0.00	$2,500.00	$0.00	$2,500.00
GENERAL CONDITIONS /L.S.	1.00	$0.00	$2,000.00	$0.00	$2,000.00
SCAFFOLDING /S.F.	5,420.00	$1.59	$2.55	$8,617.80	$13,821.00
PAINT REMOVAL & DRYING (WINDOWS) /EACH	32.00	$75.00	$135.00	$2,400.00	$4,320.00
PAINT REMOVAL & DRYING (ENTRANCE DOOR) /EACH	1.00	$645.00	$750.00	$645.00	$750.00
PREPARE SURFACE (WINDOWS) /EACH	32.00	$35.00	$67.00	$1,120.00	$2,144.00
PREPARE SURFACE (ENTRANCE DOOR) /EACH	1.00	$76.35	$215.00	$76.35	$215.00
NEW PAINT INSTALLATION (WINDOWS) /EACH	32.00	$62.00	$218.00	$1,984.00	$6,976.00
NEW PAINT INSTALLATION (ENTRANCE DOOR) /EACH	1.00	$168.00	$850.00	$168.00	$850.00
PROTECTION FOR PAINTING /L.S.	1.00	$500.00	$800.00	$500.00	$800.00
REMOVE GLAZING & SEALANT /L.F.	795.00	$2.37	$3.38	$1,884.15	$2,687.10
NEW REGLAZING COMPOUND /L.F.	795.00	$9.67	$13.25	$7,687.65	$10,533.75
SURFACE REPAIRS /L.F.	215.00	$11.55	$15.84	$2,483.25	$3,405.60
CONSOLIDATION & PATCHING REPAIRS /L.F.	95.00	$25.00	$40.00	$2,375.00	$3,800.00
NEW HINGES /PAIR	2.00	$65.00	$180.00	$130.00	$360.00
NEW GLASS WINDOWPANE (FLOAT GLASS) /EACH	17.00	$24.00	$65.50	$408.00	$1,113.50
BOTTOM SILL REPLACEMENT /EACH	1.00	$650.00	$1,200.00	$650.00	$1,200.00
NEW SILL BLOCK /EACH	2.00	$75.00	$98.75	$150.00	$197.50
NEW MEETING RAIL /EACH	8.00	$42.15	$98.75	$337.20	$790.00
WINDOW REPOSITIONING /EACH	5.00	$340.00	$385.00	$1,700.00	$1,925.00
BOTTOM RAIL & STILE REPLACEMENT /EACH	5.00	$1,100.00	$1,450.00	$5,500.00	$7,250.00
MUNTIN REPLACEMENT /EACH	18.00	$58.45	$84.35	$1,052.10	$1,518.30
INTERIOR WALL REPAIR /S.F.	12.00	$97.50	$198.37	$1,170.00	$2,380.44
INTERIOR WOOD TRIM REPLACEMENT /L.F.	14.00	$94.86	$184.67	$1,328.04	$2,585.38
EXTERIOR ORNAMENT REHABILITATION /EACH	2.00	$425.00	$750.00	$850.00	$1,500.00
NEW BOTTOM STOOL /EACH	1.00	$95.00	$150.00	$95.00	$150.00
ENTRANCE DOOR COMPONENT RESTORATION /L.S.	1.00	$0.00	$1,650.00	$0.00	$1,650.00
AREA ADJUSTMENT (UNION COUNTY)		39.70%	15.40%	$17,194.68	$11,923.08
CONTINGENCY (10%)		10.00%	10.00%	$6,050.62	$8,934.56

TOTALS		
SUB TOTAL		$98,280.21
TOTAL LABOR	$66,556.84	
LABOR ADJUSTMENT FACTOR		16.00%
LABOR ADJUSTMENT AMOUNT		$10,649.09
SUBTOTAL		$108,929.31
OVERHEAD	15.00%	$16,339.40
PROFIT	10.00%	$12,526.87
TOTAL		**$137,795.57**

EXHIBIT 'C'

STRUCTURAL REHABILITATION
HISTORIC BOXWOOD HALL RESIDENCE, ELIZABETH NJ
CONSTRUCTION COST ESTIMATE

ITEM	QUAN.	UNIT AMOUNT		TOTAL	
		LABOR	TOTAL	LABOR	TOTAL
STRUCTURAL REHABILITATION					
MOBILIZATION & DEMOBILIZATION /L.S.	1.00	$0.00	$2,000.00	$0.00	$2,000.00
GENERAL CONDITIONS /L.S.	1.00	$0.00	$1,500.00	$0.00	$1,500.00
REMOVE BROWNSTONE FOUNDATION /S.F.	6.00	$185.00	$265.00	$1,110.00	$1,590.00
NEW BROWNSTONE FOUNDATION BLOCK /EACH	24.00	$95.65	$295.00	$2,295.60	$7,080.00
MASONRY MECHANICAL TIES /EACH	8.00	$58.55	$89.25	$468.40	$714.00
REMOVE EXISTING MORTAR /L.F.	161.00	$2.85	$3.65	$458.85	$587.65
NEW LIME-RICH MORTAR /L.F.	161.00	$7.85	$12.71	$1,263.85	$2,046.31
REMOVE EXISTING CORNER WALL PLATE /L.S.	1.00	$900.00	$1,200.00	$900.00	$1,200.00
REMOVE ROTTED WOOD STUD /L.F.	18.00	$24.25	$31.84	$436.50	$573.12
SPLICE NEW 2x4 WOOD FRAMING /L.F.	36.00	$80.00	$135.00	$2,880.00	$4,860.00
REPOINT EXPOSED MORTAR JOINTS /S.F.	650.00	$6.95	$9.65	$4,517.50	$6,272.50
NEW FOUNDATION SALT BARRIER /L.S.	1.00	$200.00	$650.00	$200.00	$650.00
AREA ADJUSTMENT (UNION COUNTY)		39.70%	15.40%	$5,768.69	$4,477.33
CONTINGENCY (10%)		10.00%	10.00%	$2,029.94	$3,355.09

TOTALS		
SUB TOTAL		$36,906.00
TOTAL LABOR	$22,329.33	
LABOR ADJUSTMENT FACTOR		16.00%
LABOR ADJUSTMENT AMOUNT		$3,572.69
SUBTOTAL		$40,478.69
OVERHEAD	15.00%	$6,071.80
PROFIT	10.00%	$4,655.05
TOTAL		**$51,205.55**

EXHIBIT 'C'

APPENDIX "D"

Hazardous Materials Testing Results

EXHIBIT 'C'

OrderID: 042115502

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*: 042115502

200 ROUTE 130 N
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5973

Company : Ronald A. Sebring Assoc.		**EMSL-Bill to:** ☒ Same ☐ Different If Bill to is Different note instructions in Comments**	
Street: 2156 Route 37 West Suite 201		*Third Party Billing requires written authorization from third party*	
City: Manchester	**State/Province: NJ**	**Zip/Postal Code: 08759**	**Country: USA**
Report To (Name): .		**Fax #: 732-701-9919**	
Telephone #: 732-701-9444		**Email Address: Aclark@rasallc.com**	
Project Name/Number:	**Boxwood Hall Residence - Window Conditions and Structural Assessment**		
Please Provide Results: ☐ Fax ☒ Email	**Purchase Order:**	**U.S. State Samples Taken: NJ**	

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☒ 1 Week ☐ 2 Week

**For TEM Air 3 hr through 6 hr, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM – Air ☐ **4-4.5hr TAT (AHERA only)**
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☒ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

RECEIVED
EMSL
CINNAMINSON, NJ
JUN 25 PM 2:40

☐ **Check For Positive Stop – Clearly Identify Homogenous Group**

Samplers Name: Alexander R. Clark **Samplers Signature:**

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
1	Window Glazing Compound		06/17/21
2	Window Paint		06/17/21

Client Sample # (s): - **Total # of Samples:** 2

Relinquished (Client): **Date:** **Time:** .

Received (Lab): DSS **Date:** 6/25/21 **Time:** 2400

Comments/Special Instructions:

ZRH

EXHIBIT 'C'

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order: 042115502
Customer ID: RASA30
Customer PO:
Project ID:

Attention: Ronald A. Sebring, R.A.
Ronald Sebring Association LLC
405 Richmond Ave
Point Pleasant Beach, NJ 08742

Phone: (732) 701-9444
Fax: (732) 528-5123
Received Date: 06/25/2021 2:40 PM
Analysis Date: 07/02/2021
Collected Date: 06/17/2021

Project: Boxwood Hall Residence - Window Conditions and Structural Assessment

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
1 *042115502-0001*	Window Glazing Compound	Gray Non-Fibrous Homogeneous	98.5 Other	None	1.5% Anthophyllite
2 *042115502-0002*	Window Paint	White/Red Non-Fibrous Homogeneous	97.4 Other	None	2.6% Anthophyllite

Analyst(s)

Seri Smith (2)

Samantha Rundstrom, Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. EMSL recommends that samples reported as none detected or <1% undergo additional analysis via PLM to avoid the possibility of false negatives.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ PA ID# 68-00367

Initial report from: 07/02/2021 16:49:19

EXHIBIT 'C'