

SCOPE OF WORK

Colonnade Restoration

Princeton Battlefield State Park
Princeton, Mercer County, NJ

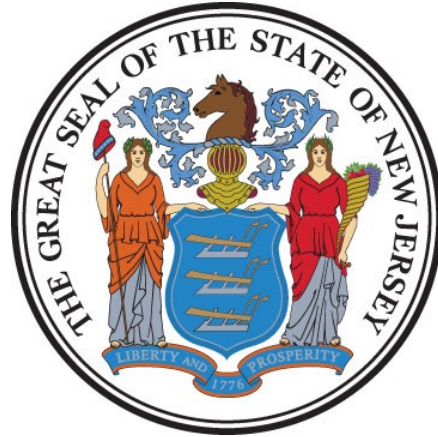
Project No. P1291-00

STATE OF NEW JERSEY

Honorable Philip D. Murphy, Governor
Honorable Sheila Y. Oliver, Lt. Governor

DEPARTMENT OF THE TREASURY

Elizabeth Maher Muoio, Treasurer



DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION

Christopher Chianese, Director

Date: May 5, 2023

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PROJECT NAME: Colonnade Restoration
PROJECT LOCATION: Princeton Battlefield State Park
PROJECT NO: P1291-00
DATE: May 5, 2023

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B. PROJECT SITE LOCATION MAP

C. PRINCETON BATTLEFIELD COLONNADE CONDITIONS ASSESSMENT

I. OBJECTIVE

The objective of this project is to restore the Colonnade at Princeton Battlefield State Park. The restoration of the Colonnade may include disassembling and reconstruction of the masonry, including the stairs, piers cheek walls, pavers, marble, and existing parging.

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**

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 \$602,817.

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 \$819,000.

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.

<u>PROJECT PHASE</u>	<u>ESTIMATED DURATION (Calendar Days)</u>
1. Site Access Approvals & Schedule Design Kick-off Meeting	14
2. Design Development Phase	42
• <i>Project Team & DPMC Plan/Code Unit Review & Comment</i>	14
3. Final Design Phase	42
• <i>Project Team & DPMC Plan/Code Unit Review & Approval</i>	14
4. Final Design Re-Submission to Address Comments	7
• <i>Project Team & DPMC Plan/Code Unit Review & Approval</i>	14
5. DCA Submission Plan Review	30
6. Permit Application Phase	7
• <i>Issue Plan Release</i>	
7. Bid Phase	42
8. Award Phase	28
9. Construction Phase	180
10. Project Close Out Phase	30

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, 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:

Colonnade at Princeton Battlefield State Park
500 Mercer Rd.
Princeton, NJ 08540

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. DPMC Representative:

Name: Ronald Kraemer, Project Design Manager
Address: Division of Property Management & Construction
20 West State Street, 3rd Floor
Trenton, NJ 08608-1206
Phone No: (609) 633-7186
E-Mail: ronald.kraemer@treas.nj.gov

2. Department of Environmental Protection Representative:

Name: Brian McDowell, Project Manager
Address: Department of Environmental Protection
275 Freehold-Englishtown Road
Englishtown, New Jersey 07726
Phone No: (609) 789-8712
E-Mail: Brian.McDowell@dep.nj.gov

VI. PROJECT DEFINITION

A. BACKGROUND

The Colonnade is on the western side of the battlefield park placed near the original location of the home of William Clarke, one of the brothers who farmed the surrounding land at the time of the battle. The columns and lintel actually originated as the front entrance of the mansion of Philadelphia merchant Matthew Newkirk, who had commissioned Thomas Walter for its construction. When Newkirk’s home was demolished around 1900, the colonnade was salvaged and transported to Princeton to become the entrance of Mercer Manor, another distinguished home that stood on the edge of the battlefield until it was destroyed by fire in the 1950s. At that time, the Institute for Advanced Study owned the property and donated its portico to the State of New Jersey. The Colonnade was re-erected and dedicated in the park in 1959 as the entrance to the common grave of 21 British and 16 American soldiers killed in the Battle of Princeton and declared a National Historic Monument in 1962.

B. FUNCTIONAL DESCRIPTION OF THE BUILDING

The Colonnade on the Princeton Battlefield is located on the western side of the Battlefield at the top of a rise in the section of the park that is northwest of Mercer Road. The colonnade is currently a freestanding construction, but originally formed the front entrance of two different houses. The Colonnade is a U-shaped construction entirely of marble. The front of the colonnade faces south and consists of four fluted columns with ionic capitals topped by an architrave of largely massive solid blocks of stone. The north side of center architrave block has been inscribed. The architrave returns to the north at either end to rest atop square piers in line with the end columns and the top of the entire architrave is finished with a cementitious parge. The piers are constructed of many courses of smaller blocks. The ends of the east and west architrave blocks are augmented in length by three courses of smaller stones and the top west side of the east architrave block is constructed of multiple pieces of stone. The entire construction is open to the north. The south side of the colonnade is fronted by marble stairs that extend almost the full length of the colonnade flanked by marble cheek walls, each slightly wider than the column base, the tops of which are level with the paving. The space within the construction is paved with marble pieces of random size and the marble paving encloses the rear piers.

VII. CONSULTANT DESIGN RESPONSIBILITIES

A. MONUMNET IMPROVEMENTS

1. General:

The basis of this design shall be based on the “Princeton Battlefield Colonnade Conditions Assessment” study prepared by HMR Architects dated August 10, 2022, see **Exhibit ‘C’**. Within this report, findings and recommendations include disassembly and reconstruction of a significant portion of the masonry, including the square piers, the stairs, cheek walls, parging on the top of the architrave, pavers, and marble.

Thus, the Consultant is to provide a new and constructible design, along with specifications to resolve the recommendations outlined within the report.

2. Piers and Cheek Walls:

The Consultant shall provide the design and specifications for the piers and cheek walls to be reconstructed with the existing marble mechanically anchored to a new dimensionally stable core. Using concrete and concrete masonry are not recommended because of their tendency to shrink with age. Replacement of some cracked stones at the piers may be needed, but the stones should be repaired with adhesive and pins if possible.

3. Existing Parging:

The Consultant shall provide the design and specifications for the existing parging on the top of the architrave to be replaced with metal roofing to provide drainage slope and protection of the joints; joints in the upper parts of the colonnade that are not disassembled should be repointed. A flashing should be considered at the top of the piers to prevent water intrusion at the exposed horizontal joint.

4. Pavers:

The Consultant shall provide the design and specifications for the paving that needs to be lifted and re-set on a properly prepared base. Joints in the paving and stairs should be filled with mortar. Use of an anti-freeze additive in the mortar such as Ice Minus 9 manufactured by Edison Coatings is recommended due to the exposure. The cracked base stone at the south column suggests ongoing movement which should be monitored. Repoint and reset the entrance steps as deemed needed as per inspection. Evaluate the existing railings and repair, refurbish or replace if needed upon inspection.

5. Marble:

The marble itself requires little work. Hands-on assessment is recommended to remove small, loose pieces of stone and confirm the sound attachment of all previous repairs. Small patch repairs may be required locally to ensure water drains off the stone surfaces and does not find places to collect. Cleaning will be needed to remove carbonate crusts from the pier stones, and cleaning to remove general soiling is recommended if only to prevent the incentive to create scratched graffiti. Microabrasive cleaning by the Quintek method is strongly recommended over chemical cleaning of any kind, but options should be tested. Cleaning the pier stones while the piers are disassembled is recommended. Deep fissures in the architrave stones should be filled with mortar to prevent continued erosion. Provide the design to clean and restore as indicated above.

6. State Historic Preservation Office Approval:

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. A sample application is attached as Exhibit ‘E’.

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.

B. EXISTING DOCUMENTATION

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:

<http://www.state.nj.us/dca/divisions/codes/codreg/>

1. NJ Uniform Construction Code (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 IX.A.

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

As of July 25, 2022, the Department of Community Affairs (DCA) is only accepting digital signatures and seals issued from a third party certificate authority. The DCA ePlans site can be found at:

<https://www.nj.gov/dca/divisions/codes/offices/ePlans.html>

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

https://www.state.nj.us/dca/divisions/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”:

Joyce Spitale, DPMC
PO Box 235
Trenton, NJ 08625-0235
Joyce.Spitale@treas.nj.gov 609-943-5193

The Consultant shall complete the NJUCC “Plan Review Fee Schedule”, determine the fee due and pay the NJUCC Plan Review fees, refer to Paragraph IX.A.
The NJUCC “Plan Review Fee Schedule” can be found at:

http://www.state.nj.us/dca/divisions/codes/forms/pdf_bcpr/pr_fees.pdf

2. NJ Uniform Construction Code 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:

<http://www.state.nj.us/dca/divisions/codes/forms/>

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. 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:

http://www.state.nj.us/dca/divisions/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 New Jersey Uniform Construction Code.

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, "**Permit Fee Allowance.**"

The Consultant may refer to the Division of Property Management and Construction "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. 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 NJ Uniform Construction Code permit) and include that amount in its fee proposal line item entitled “**Plan Review and Permit Fee Allowance**”, refer to Paragraph IX.A. A breakdown of each permit and application fee shall be attached to the fee proposal for reference.

NOTE: The NJ Uniform Construction Code 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 under the “Permit Phase” column.

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

PROJECT NAME: Colonnade Restoration
PROJECT LOCATION: Princeton Battlefield State Park
PROJECT NO: P1291-00
DATE: May 5, 2023

X. 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 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 5/5/2023
JAMES WRIGHT, MANAGER DATE
DPMC PROJECT PLANNING & INITIATION

SOW APPROVED BY: Brian McDowell 5/5/2023
BRIAN MCDOWELL, PROJECT MANAGER DATE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOW APPROVED BY: Ronald W Kraemek 6/1/2023
RONALD KRAEMEK, PROJECT MANAGER DATE
DPMC PROJECT MANAGEMENT GROUP

SOW APPROVED BY: Richard S Flodmand 6/5/2023
RICHARD FLODMAND, DEPUTY DIRECTOR DATE
DIV PROPERTY MGT & CONSTRUCTION

XI. 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:

- **DESIGN DEVELOPMENT PHASE**
- **FINAL DESIGN PHASE**
- **PERMIT APPLICATION PHASE**
- **BIDDING AND CONTRACT AWARD**
- **CONSTRUCTION PHASE**
- **PROJECT CLOSE-OUT PHASE**

XII. EXHIBITS

- A. **SAMPLE PROJECT SCHEDULE FORMAT**
- B. **PROJECT SITE LOCATION MAP**
- C. **PRINCETON BATTLEFIELD COLONNADE CONDITIONS ASSESSMENT**

END OF SCOPE OF WORK

February 7, 1997
Rev.: January 29, 2002

Responsible Group Code Table

The codes below are used in the schedule field "GRP" that identifies the group responsible for the activity. The table consists of groups in the Division of Property Management & Construction (DPMC), as well as groups outside of the DPMC that have responsibility for specific activities on a project that could delay the project if not completed in the time specified. For reporting purposes, the groups within the DPMC have been defined to the supervisory level of management (i.e., third level of management, the level below the Associate Director) to identify the "functional group" responsible for the activity.

<u>CODE</u>	<u>DESCRIPTION</u>	<u>REPORTS TO ASSOCIATE DIRECTOR OF:</u>
CM	Contract Management Group	Contract Management
CA	Client Agency	N/A
CSP	Consultant Selection and Prequalification Group	Technical Services
A/E	Architect/Engineer	N/A
PR	Plan Review Group	Technical Services
CP	Construction Procurement	Planning & Administration
CON	Construction Contractor	N/A
FM	Financial Management Group	Planning & Administration
OEU	Office of Energy and Utility Management	N/A
PD	Project Development Group	Planning & Administration

EXHIBIT 'A'

Activity ID	Description	Respon	Weeks
<PROJ>			
Design			
CV3001	Schedule/Conduct Pre-design/Project Kick-Off Mtg.	CM	
CV3020	Prepare Program Phase Submittal	AE	
CV3021	Distribute Program Submittal for Review	CM	
CV3027	Prepare & Submit Project Cost Analysis (DPMC-38)	CM	
CV3022	Review & Approve Program Submittal	CA	
CV3023	Review & Approve Program Submittal	PR	
CV3024	Review & Approve Program Submittal	CM	
CV3025	Consolidate & Return Program Submittal Comments	CM	
CV3030	Prepare Schematic Phase Submittal	AE	
CV3031	Distribute Schematic Submittal for Review	CM	
CV3037	Prepare & Submit Project Cost Analysis (DPMC-38)	CM	
CV3032	Review & Approve Schematic Submittal	CA	
CV3033	Review & Approve Schematic Submittal	PR	
CV3034	Review & Approve Schematic Submittal	CM	
CV3035	Consolidate & Return Schematic Submittal Comment	CM	
CV3040	Prepare Design Development Phase Submittal	AE	
CV3041	Distribute D. D. Submittal for Review	CM	
CV3047	Prepare & Submit Project Cost Analysis (DPMC-38)	CM	
CV3042	Review & Approve Design Development Submittal	CA	
CV3043	Review & Approve Design Development Submittal	PR	
CV3044	Review & Approve Design Development Submittal	CM	
CV3045	Consolidate & Return D.D. Submittal Comments	CM	
CV3050	Prepare Final Design Phase Submittal	AE	
CV2001	Distribute Final Design Submittal for Review	CM	
CV2002	Review & Approve Final Design Submittal	CA	
CV3053	Review & Approve Final Design Submittal	PR	
CV3054	Review Final Design Submittal for Constructability	OCS	

Sheet 1 of 3

Bureau of Design & Construction Services

DBCA - TEST

NOTE:
Refer to section "IV Project Schedule" of the Scope of Work for contract phase durations.

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EXHIBIT 'A'

Activity ID	Description	Respn	Weeks				
CV2055	Review & Approve Final Design Submittal	CM					
CV2056	Consolidate & Return Final Design Comments	CM					
CV3060	Prepare & Submit Permit Application Documents	AE					
CV3068	Prepare & Submit Bidding Cost Analysis (DPMC-38)	CM					
Plan Review-Permit Acquisition							
CV4001	Review Constr. Documents & Secure UCC Permit	PR					
CV4010	Provide Funding for Construction Contracts	CA					
CV4020	Secure Bid Clearance	CM					
Advertise-Bid-Award							
CV5001	Advertise Project & Bid Construction Contracts	CP					
CV5010	Open Construction Bids	CP					
CV5011	Evaluate Bids & Prep. Recommendation for Award	CM					
CV5012	Evaluate Bids & Prep. Recommendation for Award	AE					
CV5014	Complete Recommendation for Award	CP					
CV5020	Award Construction Contracts/Issue NTP	CP					
Construction							
CV6000	Project Construction Start/Issue NTP	CM					
CV6001	Contract Start/Contract Work (25%) Complete	CON					
CV6002	Preconstruction Meeting	CM					
CV6003	Begin Preconstruction Submittals	CON					
CV6004	Longest Lead Procurement Item Ordered	CON					
CV6005	Lead Time for Longest Lead Procurement Item	CON					
CV6006	Prepare & Submit Shop Drawings	CON					
CV6007	Complete Construction Submittals	CON					
CV6011	Roughing Work Start	CON					
CV6012	Perform Roughing Work	CON					
CV6010	Contract Work (50%+) Complete	CON					
CV6013	Longest Lead Procurement Item Delivered	CON					
CV6020	Contract Work (75%) Complete	CON					

Sheet 2 of 3

Bureau of Design & Construction Services

EXHIBIT 'A'

DRCA - TEST

NOTE:
Refer to section "IV Project Schedule" of the Scope of Work for contract phase durations.

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Activity ID	Description	Respn	Weeks
CV6014	Roughing Work Complete	CON	
CV6021	Interior Finishes Start	CON	
CV6022	Install Interior Finishes	CON	
CV6030	Contract Work to Substantial Completion	CON	
CV6031	Substantial Completion Declared	CM	
CV6075	Complete Deferred Punch List/Seasonal Activities	CON	
CV6079	Project Construction Complete	CM	
CV6080	Close Out Construction Contracts	CM	
CV6089	Construction Contracts Complete	CM	
CV6090	Close Out A/E Contract	CM	
CV6092	Project Completion Declared	CM	

DBCA - TEST

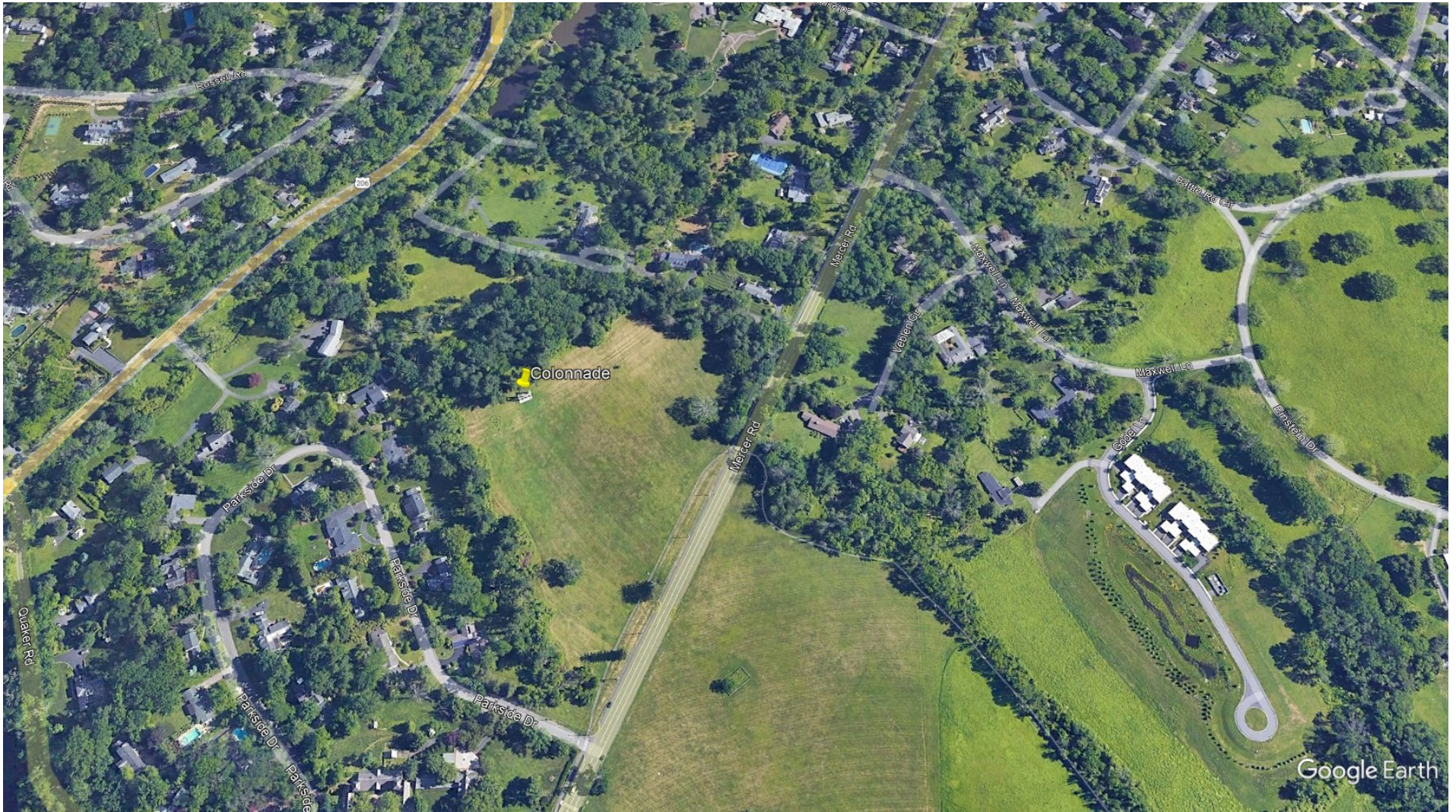
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Bureau of Design & Construction Services

EXHIBIT 'A'

NOTE:
Refer to section "IV Project Schedule" of the
Scope of Work for contract phase durations.

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Project Site Location Map
Colonnade at Princeton Battlefield State Park
EXHIBIT 'B'



PRINCETON BATTLEFIELD COLONNADE CONDITIONS ASSESSMENT

PREPARED FOR NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION

HMRARCHITECTS

STONE CONSERVATION
SCHNABEL CONSERVATION L.L.C.

CONSTRUCTION COST ESTIMATING
INTERNATIONAL CONSULTANTS, INC.

FINAL - 10 AUGUST 2022

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I. EXECUTIVE SUMMARY

A. General Information

The Princeton Battlefield Colonnade is located within the Princeton Battlefield State Park on the west side of Princeton Pike in Princeton, New Jersey. The park is owned by the State of New Jersey. The report was commissioned by the NJ Department of Environmental Protection, Office of Resource Development.

B. Background

NJ-DEP, through their Office of Resource Development, is responsible for the planning of capital improvements and restoration activities in the park. Visible deterioration of the stone masonry prompted a request to conduct a preliminary conditions assessment to determine the need for a restoration program to preserve the structure.

C. Overall Description

The Ionic Colonnade on the Princeton Battlefield is located at the top of a rise in the section of the park that is northwest of Mercer Road. The colonnade is currently a freestanding construction, but originally formed the portico of two different houses. The second home, Mercer Manor was reportedly destroyed by fire in the 1950's at which point it was on the property of the Institute for Advanced Study, who subsequently donated the elements to the State of New Jersey. It was erected in its current location in 1959.

(Excerpt from Schnabel Conservation report)

D. Format and Scope of Report

This conditions study was completed to provide a preliminary assessment of the existing conditions at the structure and to provide guidance for further investigations prior to restoration.

This report consists of the *Masonry Conservation Assessment* including preliminary recommendations for restoration, and a conceptual phase construction cost estimate. An appendix includes a ground level plan and elevations to support the cost estimating effort.

This report is provided to guide NJ-DEP project planning and to aid in the solicitation of professional services proposals for development of restoration drawings and construction administration services.

E. Parameters and Limitations of the Assessment

This effort is limited a preliminary assessment of the existing conditions at the colonnade and its raised plaza. The findings are based on observations from man-lift and floor level access. The study did not include subsurface investigations, monitoring of observed movement, or material testing.

F. Team Members

The architecture firm of HMR Architects, located in Princeton, New Jersey, was responsible for the overall preparation of this report. Lorraine Schnabel of Schnabel Conservation completed the field survey in conjunction with HMR and was the principal author of the Masonry Conditions Assessment. Robert Russell served as historic preservation architect for the report. Mike Funk of International Consulting Inc. provided construction cost estimating services.

G. Sponsoring Groups / Funding Sources

The State of New Jersey Department of Environmental Protection (NJDEP), Office of Resource Development undertook the preparation of this report primarily to address current maintenance and repair requirements to maintain the structure. This project was funded with by special State appropriation.

MASONRY CONSERVATION ASSESSMENT

For The

IONIC COLONNADE PRINCETON BATTLEFIELD HISTORIC SITE Princeton, New Jersey

Prepared For

HMR Architects
821 Alexander Road, Suite 115
Princeton, NJ 08540

Prepared By

Schnabel Conservation L.L.C.
110 Kensington Avenue
Trenton, New Jersey 08618

July 27, 2022

EXHIBIT 'C'

INTRODUCTION

The Ionic Colonnade in the Princeton Battlefield Historic Site in Princeton, New Jersey is located at the top of a rise in the section of the park that is northwest of Mercer Road (Photo 1). The colonnade is currently a free-standing construction, but originally formed the portico of two different houses. The colonnade originally formed the portico of the house of Matthew Newkirk, designed by Thomas Ustick Walter in 1835 and located at 1300 Arch Street in Philadelphia on the southwest corner. A drawing and plan of the house is in the Thomas U. Walter collection of The Athenaeum of Philadelphia; the drawing also appears on the historic marker near Mercer Road.¹

According to *The Official Guidebook to Philadelphia*² the Newkirk residence was purchased in 1875 by the Society of the Sons of St. George, an organization formed in 1772 “...for advice and assistance to Englishmen in distress...”³ The Sons of St. George had been looking for a meeting place, and purchased the Newkirk property, “...a handsome marble building, constructed for and occupied as a mansion-house by Matthew Newkirk, Sr., and afterward by his son.”⁴ As Figure 1 shows, “The building has been greatly enlarged and altered...”⁵

The St. Georges Hall was demolished at some point in the early 20th century; the Philadelphia Architects and Buildings site gives 1903 as the date.⁶ The portico was apparently salvaged and, according to an article by Inez Stansfield in the *Daughters of the American Revolution Magazine*,⁷ re-used in the construction of Mercer Manor, a mansion on the southeast side of Mercer Road. The location of the building is shown on Plate 024 in the *Atlas of the City of Trenton and Borough of Princeton, Mercer County, New Jersey* from 1905.⁸

A search for images of Mercer Manor in the collection of the Princeton Historical provided two that show the front of Mercer Manor: one with the building intact that was also used on the historic marker,⁹ and a second with the building largely demolished except for the portico with one bay to either side.¹⁰ The appearance of the portico in these images seems to match that of the portico in images of the front of St. Georges Hall in the collection of the Athenaeum.¹¹

¹ The drawing can be viewed on the Athenaeum’s Philadelphia Architects and Buildings website: https://www.philadelphiabuildings.org/pab/app/im_display.cfm/881768?ProjectId=E6F384B8-D8D1-47B6-86053BF87C0EFFF8 Accessed July 7, 2022

² Thomas Westcott, 1875. The information about the building is on pages 231-233. <https://www.google.com/books/edition/The+Official+Guide+Book+to+Philadelphia/TfBHAQAAMAAI?hl=en&gbpv=1&dq=The+Official+Guidebook+to+Philadelphia,+Thompson+Westcott&printsec=frontcover> Accessed July 7, 2022

³ Ibid. p. 232

⁴ Ibid. p. 232

⁵ Ibid. p. 232; compare to the drawing in footnote 1.

⁶ https://www.philadelphiabuildings.org/pab/app/pj_display_alldates.cfm/18005 accessed July 7, 2022

⁷ February 1926, Vol. LX, No. 2, WHOLE No. 394; <https://www.google.com/books/edition/Daughters+of+the+American+Revolution+Mag/3G4mAQAIAAAI?hl=en&gbpv=1&dq=mercer+Manor+and+its+historic+setting&pg=PA69&printsec=frontcover> accessed July 7, 2022. There is also a book by the same name and author.

⁸ James M. Lathrop, author, A.H. Mueller & Company, Philadelphia, PA. <http://www.historicmapworks.com/Map/US/11635/Plate+024/Trenton+City+and+Princeton+1905/New+Jersey/> accessed July 7, 2022.

⁹ <https://princeton.pastperfectonline.com/Photo/B6BFF001-9DE8-44AE-B48A-296149049210> accessed July 7, 2022.

¹⁰ https://s3.amazonaws.com/pastperfectonline/images/museum_432/014/g_11_018.jpg accessed July 7, 2022.

¹¹ https://www.philadelphiabuildings.org/pab/app/image_gallery.cfm/18005 accessed July 8, 2022.

Mercer Manor was reportedly destroyed by fire in the 1950's at which point it was on the property of the Institute for Advanced Study, who subsequently donated the elements to the State of New Jersey.¹² It was erected in its current location in 1959.

The most significant finding from reviewing all of these images is that, in both its previous incarnations as a part of a building, the portico stood on a platform with a central stair descending from the space between the two central columns, and the square elements at the back of the portico were engaged pilasters not freestanding square piers. The existing stairs and stair cheekwalls are therefore not original, though the stone may be from Mercer Manor, and the existing piers are probably a composite of the two sets of engaged pilasters observed in the image of the building under demolition, augmented with additional stone.¹³

DESCRIPTION

The Ionic Colonnade (the colonnade) is a free-standing U-shaped construction entirely of marble. The front of the colonnade faces south and consists of four fluted columns with ionic capitals topped by an architrave of largely massive solid blocks of stone (Photo 1). The north side of center architrave block is inscribed (Photo 2):

“T.U. WALTER Architect.
J. STRUTHERS & SON, Masons.
1836.”

The architrave returns to the north at either end to rest atop square piers in line with the end columns; the top of the entire architrave is finished with a cementitious parge. The piers are constructed of many courses of smaller blocks (Photo 3). The ends of the east and west architrave blocks are augmented in length by three courses of smaller stones; the top west side of the east architrave block is constructed of multiple pieces of stone (Photo 4). The entire construction is open to the north (Photo 5). The south side of the colonnade is fronted by marble stairs that extend almost the full length of the colonnade flanked by marble cheekwalls, each slightly wider than the column base, the tops of which are level with the paving (Photos 1, 6). The space within the construction is paved with marble pieces of random size (Photos 5, 7); the marble paving encloses the rear piers.

The colonnade on its current site was probably designed and constructed to accommodate the available marble from the demolition of Mercer Manor, though more research would be needed to confirm the extent of the material taken from that building. The historic and visual information suggests the piers must have been built with an internal masonry core, most likely a material other than marble. Given the construction date that material could be brick, CMU, or concrete. The stair cheekwalls seem to be constructed on a brick masonry core on a concrete foundation, both of which are visible at the north cheekwall (Photo 6). The stair seems likely to be constructed on a concrete foundation, as one is partly visible at grade (Photo 6). The paving does not seem to have any sort of foundation.

EXISTING CONDITIONS

There are two conditions of concern that are life safety issues that need to be addressed as soon as possible. The first is at the top of the piers. The small blocks of marble that extend the architrave have no mechanical attachment to the larger adjacent block and are rotating out and away (Photos 4, 8, 9); the carved portion at the north side of each pier is also moving away from the top of the column. Conditions at the east pier are significantly worse than those at the west pier. Some type of temporary stabilization should be installed to keep

¹² <https://pbs1777.org/colonnade/> accessed July 8, 2022.

¹³ https://s3.amazonaws.com/pastperfectonline/images/museum_432/014/g_11_018.jpg accessed July 7, 2022

the masonry from falling. Netting anchored into the masonry at the architrave joints would be ideal, as it could easily be removed for later work.

Another condition of concern is the deteriorated cementitious parging that was applied to the top of the architrave, presumably to both level the rough surface and to provide drainage and waterproofing (Photos 2, 10). The parging is detached from the marble, and there are many loose fragments that could be blown off by a strong wind. Removal of all the parging is recommended until a more permanent solution to leveling, waterproofing, and drainage can be made for the top of the structure.

The poor condition of the masonry at the tops of the piers has negatively affected the piers overall. Because of the open joints, water is moving down through them causing expansive freeze-thaw damage, as shown by cracked stones and widening joints, and is leaching calcium salts from the back-up masonry. The leached calcium salts form crusts along cracks in the stones, at mortar joints, and particularly below the bronze plaques (Photos 11, 12). The carbonate crust buildup below the plaque at the north pier is especially heavy; that below the plaque at the south pier is also copper stained (Photo 7). Mortar joints in both piers are in universally poor condition, with most joints cracked, many failing, and many open joints. The mortar joints in the architrave and between the column capitals and the architrave are also deteriorated, likely due to insufficiency of the wall-top parging as a drainage mechanism.

The masonry at the horizontal elements at the base of the colonnade is also in poor condition. Mortar in the paving, stairs, and cheekwall joints is deteriorated or missing (Photos 6, 7, 13, 14). The masonry of the stair cheekwalls is displaced, with the east cheekwall being the most deteriorated (Photos 13, 14); the paving is uneven with many cracked and chipped pavers (Photo 7). The paving is particularly depressed behind the column line (Photo 15); pavers at the perimeter and rear are generally sloped outwards towards the grass. One of the paving stones under the southwest column is cracked (Photo 16). The paving immediately behind the piers is different from the balance, with multiple small stones, and is in particularly poor condition (Photo 17).

The marble itself is generally in good condition. There is some marble deterioration at the fluting at the west side of the south-center column (Photo 18). Weathering has taken portions of the outer and inner volutes of the southwest and southeast column capitals (Photos 19-21). There are sound repairs at the southeast column capital; the southwest column capital has not been repaired and there is an incipient loss at the inner south volute. There are numerous old repairs to the marble, mostly made with cementitious material but there are also some dutchman that are likely old if not original (Photos 16, 20). The repairs that could be accessed all seem soundly attached. There are deep fissures in the surface of the marble architrave at the south-center (Photo 22) and north (Photo 4) elements, and but the marble appears to be sound. Shallow fissures were noted at other architrave stones along lines of silicate minerals.

Unfortunately, the most noticeable marble damage is not the product of weathering but of people. Mowers and vandals are both causing damage to the marble. Mowers driven close to the monument are causing scratches around the base and chipping at the corners (Photo 14). Most of the vandalism is graffiti, typically scratched into the marble (Photo 14); the graffiti is particularly noticeable at the rear where the stone is darker, so the scratches show clearly (Photo 17).

RECOMMENDATIONS

The existing conditions of the colonnade are such that disassembly and reconstruction of a significant portion of the masonry is needed, including the square piers and the stairs and cheekwalls. The piers and cheekwalls should be reconstructed with the existing marble mechanically anchored to a new, dimensionally stable core; concrete and concrete masonry are not recommended because of their tendency to shrink with age. Replacement of some cracked stones at the piers may be needed, but the stones should be repaired with adhesive and pins if possible.

The existing parging on the top of the architrave should be replaced with metal roofing to provide drainage slope and protection of the joints; joints in the upper parts of the colonnade that are not disassembled should be repointed (joints between the stones of the column seem sound). A flashing should be considered at the top of the piers to prevent water intrusion at the exposed horizontal joint.

The paving needs to be lifted and re-set on a properly prepared base. Joints in the paving and stairs should be filled with mortar, even though this is a maintenance item. Use of an anti-freeze additive in the mortar such as Ice Minus 9 manufactured by Edison Coatings is recommended due to the exposure. The cracked base stone at the south column suggests ongoing movement which should be monitored.

The marble itself requires little work. Hands-on assessment is recommended to remove small, loose pieces of stone and confirm the sound attachment of all previous repairs. Small patch repairs may be required locally to ensure water drains off the stone surfaces and does not find places to collect. Cleaning will be needed to remove carbonate crusts from the pier stones, and cleaning to remove general soiling is recommended if only to prevent the incentive to create scratched graffiti. Microabrasive cleaning by the Quintek method is strongly recommended over chemical cleaning of any kind, but options should be tested. Cleaning the pier stones while the piers are disassembled is recommended. Deep fissures in the architrave stones should be filled with mortar to prevent continued erosion.

CONCLUSIONS

The condition off the Ionic Colonnade is deteriorated, partly due to exposure but partly due to the nature of the construction. Local reconstruction is required to correct relatively serious problems with the masonry piers that present a life safety hazard, and to correct poor construction details that have failed, such as the parging over the top. The marble itself is reasonably sound, given its age, requiring only minor repairs and cleaning.

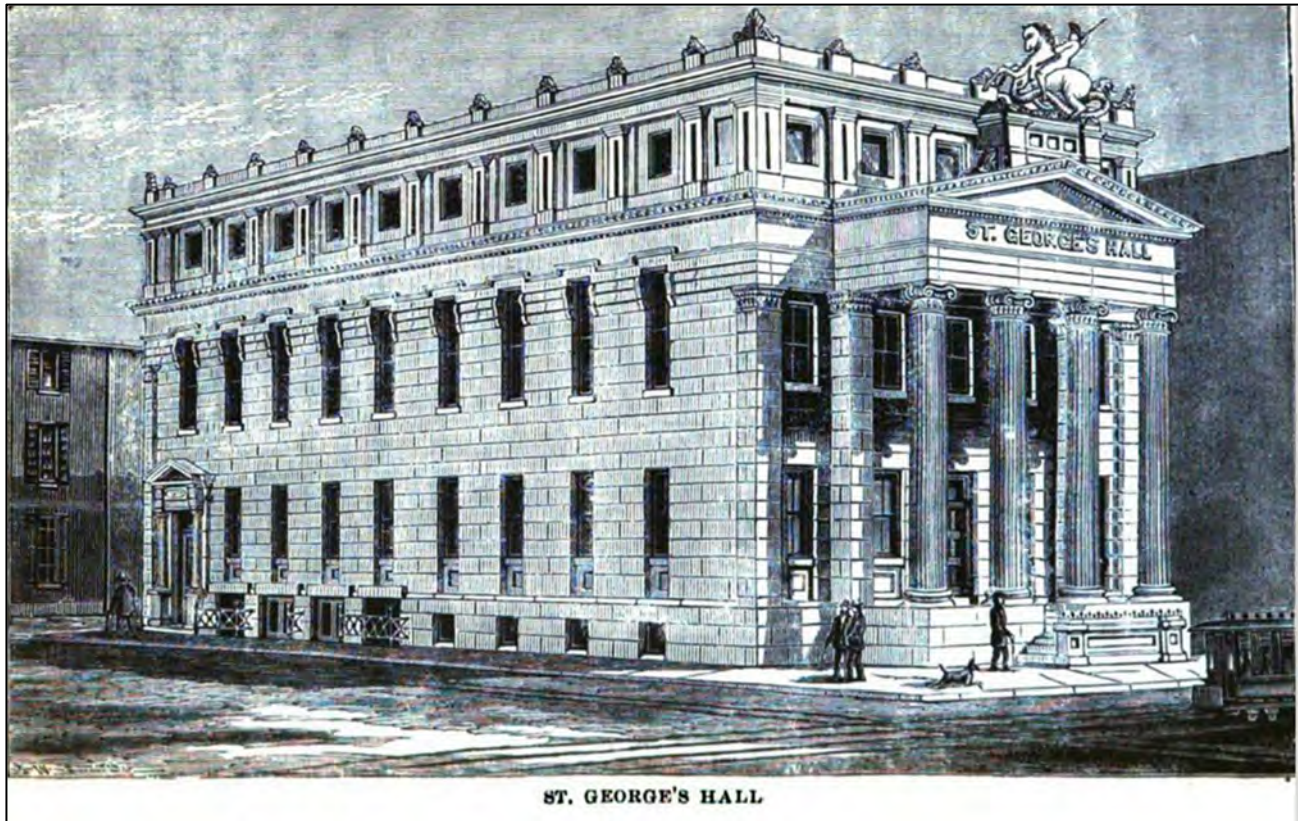


Figure 1: Engraving of the Newkirk residence in its enlarged form. St. Georges Hall was the meeting place of the Sons of St. George.¹⁴

¹⁴ Ibid. p. 233



Photo 1: Overall view of the monument from the south (all photos by Lorraine Schnabel unless otherwise indicated).

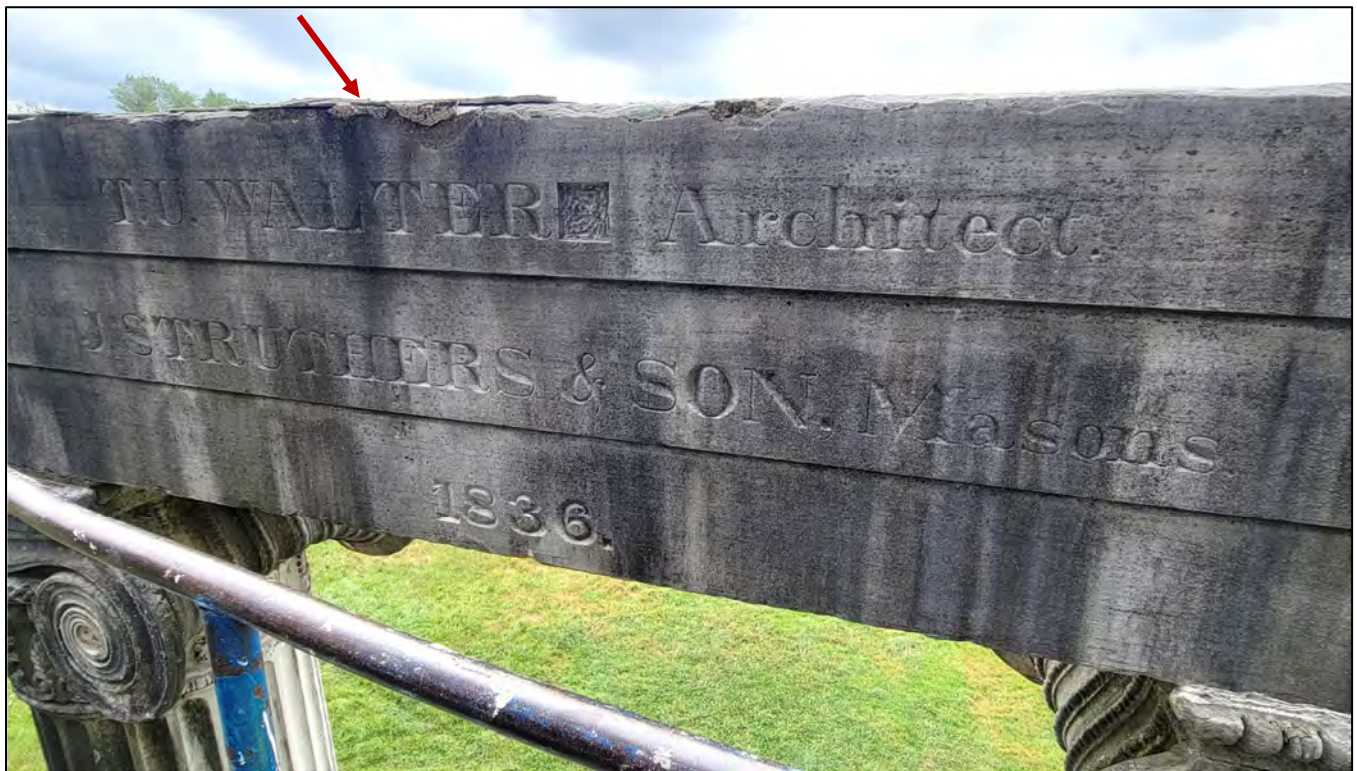


Photo 2: View of the carved inscription at the north side of the center architrave block. The cementitious patch on top of the architrave is visible at the edge (arrow)



Photo 3: View of the east elevation showing the shape of the structure and the stair cheekwalls and marble pavement.



Photo 4: View of the west side of the east architrave block. The top section is comprised of three smaller pieces; note the white streaks below, indicating water is moving through the joints. Note the movement of the small blocks at the end above the square pier. There are horizontal fissures in the bottom section of the architrave stone.



Photo 5: View of the north elevation showing that the construction is open to the rear. The white streaking visible on the piers is indicative of water moving through the masonry.



Photo 6: View of the east end of the stairs and the east cheekwall. There is concrete along the base of the stair, but also exposed brick at the bottom of the cheekwall.



Photo 7: View of the paving at the west side of the construction. Note the cracked blocks, wide joints with vegetation, and the depression immediately behind the stone between the columns.



Photo 8: View of the east side of the east pier showing the displaced masonry and deteriorated mortar joints. The condition of the masonry above the west pier is not as severe; see Photo 9. The circled joint was loose and was removed.



Photo 9: View of the east side of the west pier. Compare with Photos 4 and 8. The conditions at the top of the pier are less severe, but similar deterioration and movement is apparent. The detached parging at the top of the architrave is also just visible. There are also open joints.



Photo 10: View of the top of the colonnade showing the deteriorated cementitious parging covering the surface. The parging is detached from the surface of the stone and there are many loose, displaced fragments.



Photo 11: View of the south and west faces of the east pier showing calcium carbonate crusts below the plaque, exuding from a crack in a stone, and coming out of mortar joints.



Photo 12: Detail of the cracked stone shown in Photo 10. The orange discoloration is biological.



Photo 13: View of the east cheekwall from the west showing the extent of stone displacement and mortar conditions. The mortar joints in the stair are also open.



Photo 14: View of the west stair cheekwall showing open joints and masonry displacement. The bright white scratches and chip along the bottom edge are probably due to a lawnmower being run against the masonry.



Photo 15: View of the southeast corner from above. Note the numerous open and deteriorated joints. Note also the top stone of the relief panel is pushed out to the east.



Photo 16: View of the west end of the colonnade showing the cracked column base and the adjacent cracked paver. There are two repairs to this stone: one dutchman and one patch.



Photo 17: Detail of the paving behind the piers showing general conditions. The stones at this location differ from the others being generally smaller and less regular in shape. The scratched graffiti is pronounced at the rear of the piers but was observed at other locations as well. The unevenness of the pavers is clearly visible.



Photo 18: Detail of the deteriorated fluting at the west side of the south-center column.



Photo 19: View of the south side of the southeast column capital showing old cementitious patch repairs; these are soundly attached.



Photo 20: View of the north side of the same column capital as shown in Photo 18 showing loss and old repair of the north side volutes—compare the appearance with those of the adjacent column. Note also the old dutchman repairs at the columns; the dutchman at the southeast column has spall patches to the volutes below.



Photo 21: Loss and incipient spall at the north side of the southwest column capital.



Photo 22: Fissures in the central stone at the south elevation. The condition of the mortar joints in the architrave and between the architrave and column capital is typical.

HMR ARCHITECTS
PRINCETON BATTLEFIELD COLONNADE
CONDITION ASSESSMENT
PRINCETON, NEW JERSEY

ICI #: 222493
 Prep: mcf
 Date: 8/3/2022
 Revised:

ORDER OF MAGNITUDE COST ESTIMATE

Account	Description	Quantity	Unit	Unit Cost	Amount
<u>EXTERIOR RESTORATION</u>					
	Scaffolding, Access	1	LS	\$ 25,000.00	\$ 25,000
	Shoring/Temporary Supports	1	LS	15,000.00	15,000
	Temporary Netting, Parge Top of Architrave	1	LS	7,500.00	7,500
	Disassemble & Reconstruct Masonry Piers, New Core (2'-8" x 3-3" x 26'-8" High)	2	EA	75,000.00	150,000
	Repair/Replace Damaged, Cracked Stones as Req'd	1	LS	20,000.00	20,000
	Reconstruct Ends of Architrave Bearing on Piers	2	EA	20,000.00	40,000
	Repoint Architrave Joints	410	SF	30.00	12,300
	Repoint Columns	4	EA	11,500.00	46,000
	New Parge & Metal Coping/Roofing Over Architrave	54	LFN	225.00	12,150
	Minor Stone Repairs	1	LS	25,000.00	25,000
	Disassemble & Reset Stone Steps	112	LFN	175.00	19,600
	Reconstruct Ends Walls @ Steps	2	EA	13,500.00	27,000
	Disassemble & Reset Stone Paving, Grade as Req'd	715	SF	50.00	35,750
	Replace Damaged, Cracked Stones as Required	1	LS	10,000.00	10,000
	Cleaning All Stone	3,225	SF	15.00	48,375
	SUBTOTAL				\$ 493,675
<u>GENERAL CONDITIONS/REQUIREMENTS & TEMPORARY PROTECTION</u>					
	Site Management, Supervision, Coordination	10%			49,368
	General Requirements - Quality Control, Temp. Utilities/Facili Clean Up, Site Office Expenses, Etc.	7.5%			37,026
	Temporary Protections, Barriers	1	LS	10,000.00	10,000
	SUBTOTAL - GENERAL CONDITIONS/REQUIREMENTS				\$ 96,393
	Total				\$ 590,068
	Design Contingency	20%			118,014
	Fees, OH&P, Insurances, Permits	8.5%			60,187
	Escalation	0%			-
	TOTAL ESTIMATED CONSTRUCTION COST				\$ 768,269

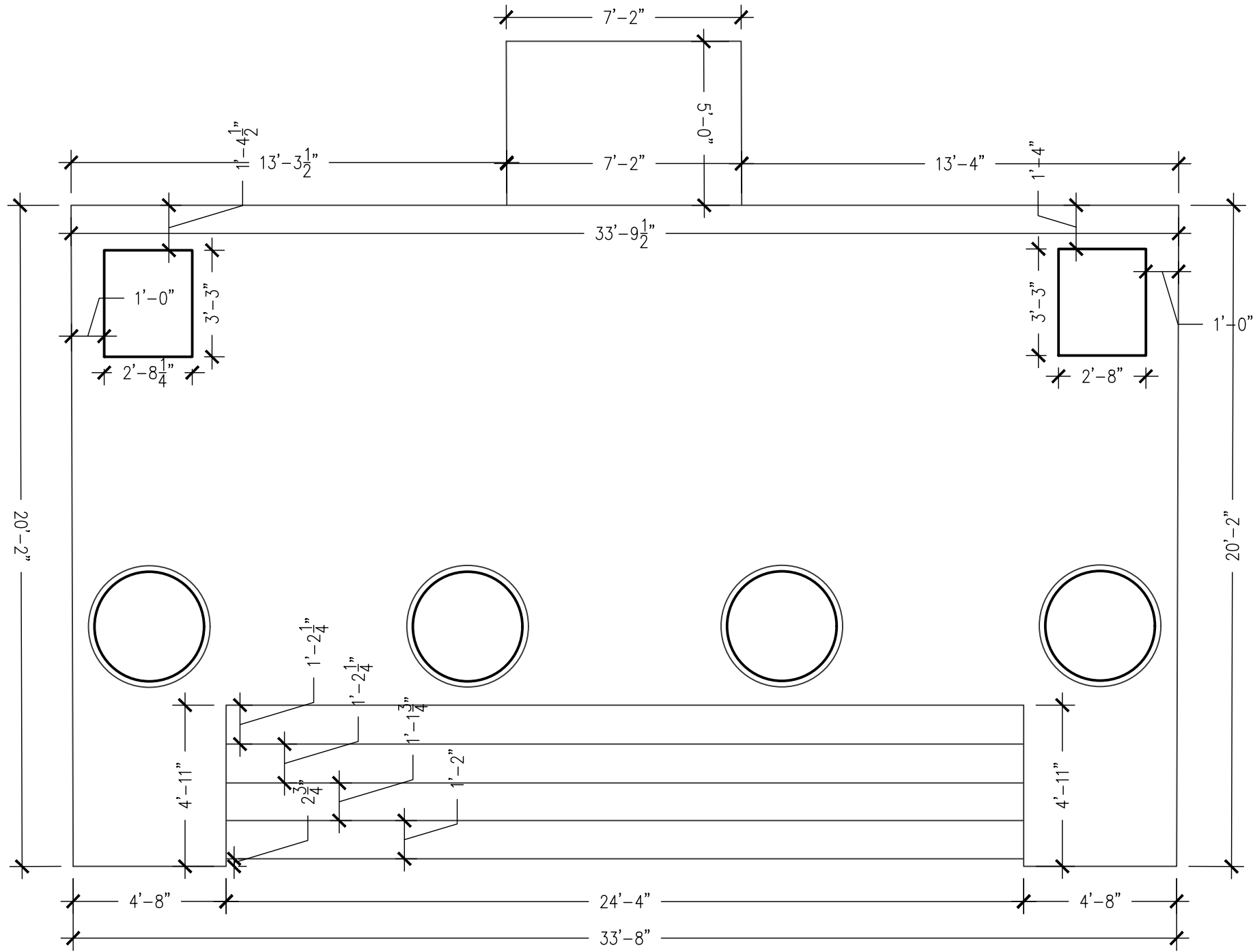
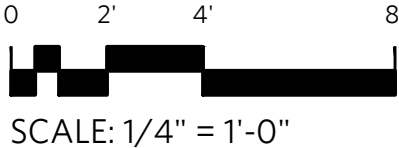


EXHIBIT 'C'



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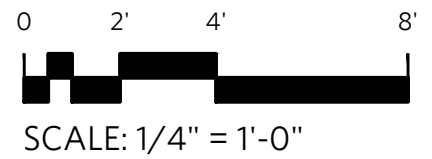
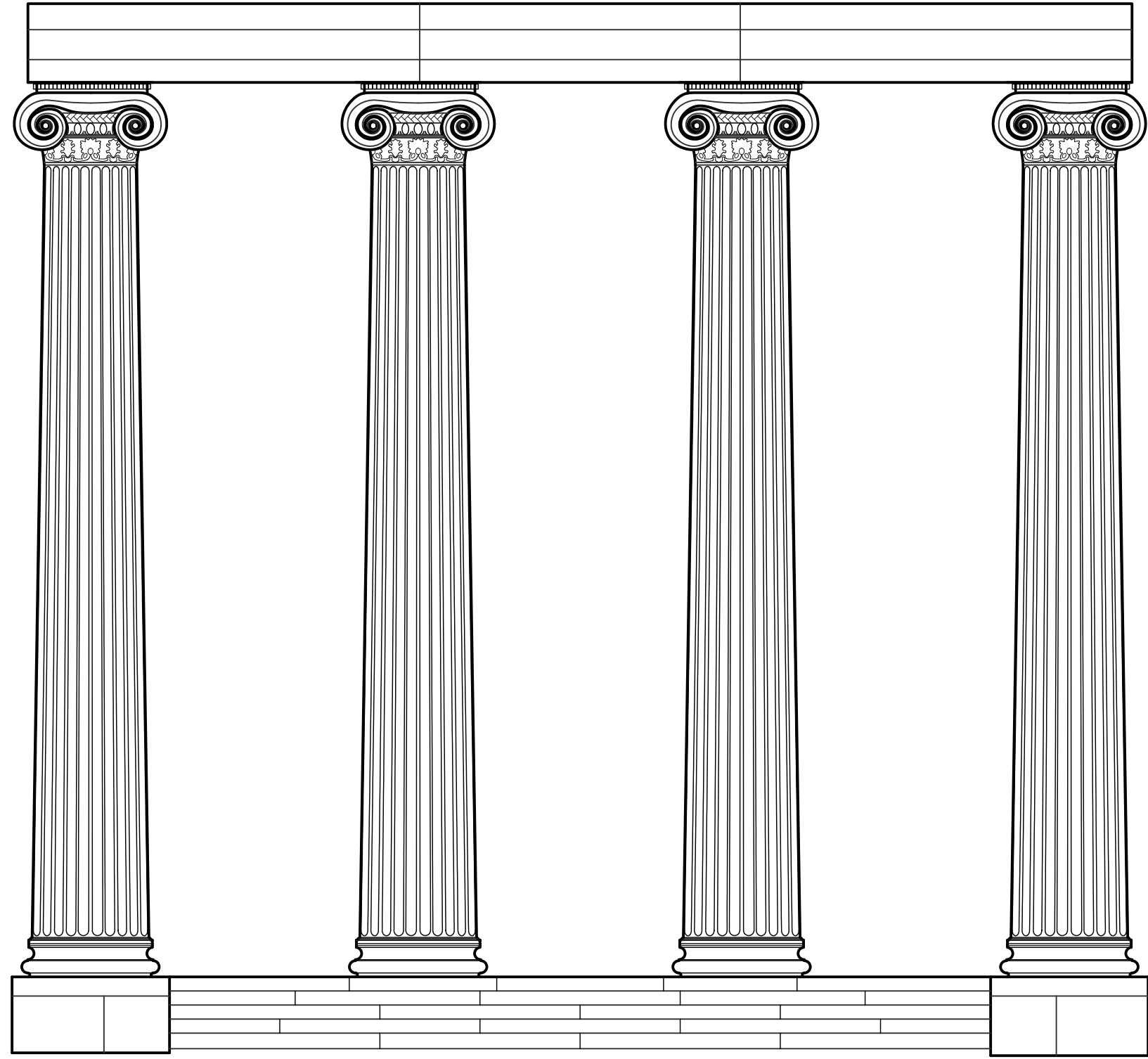
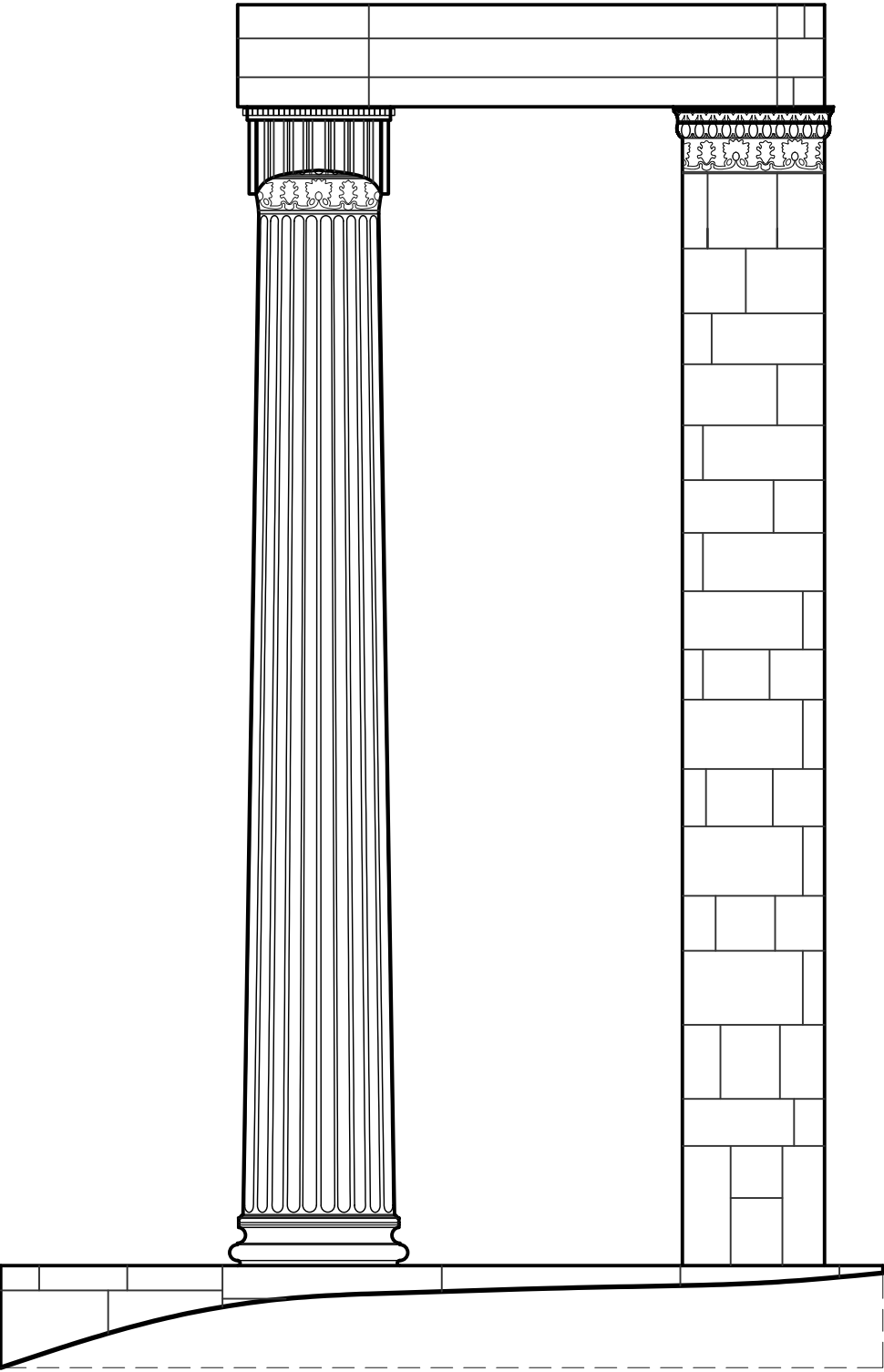


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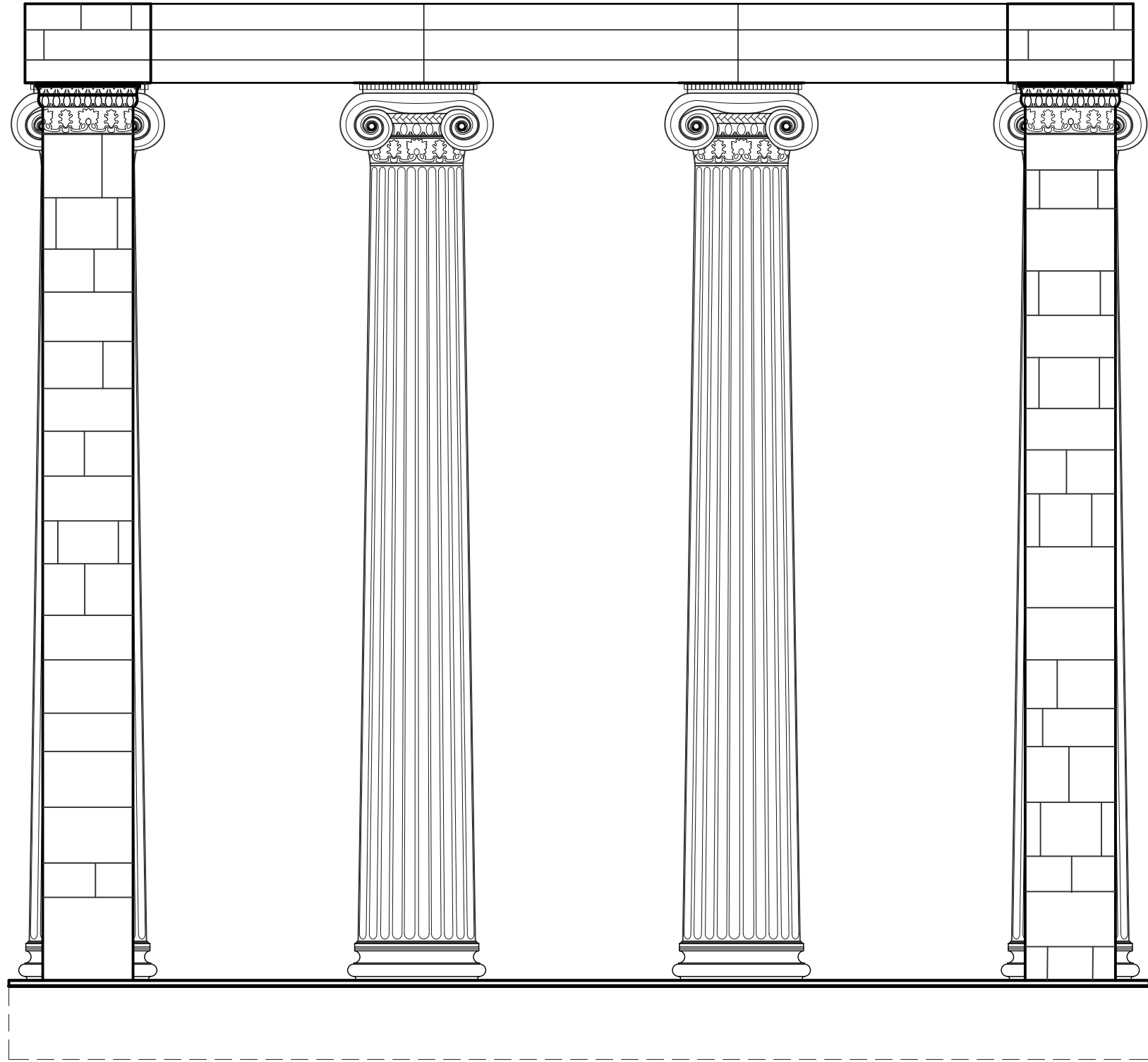
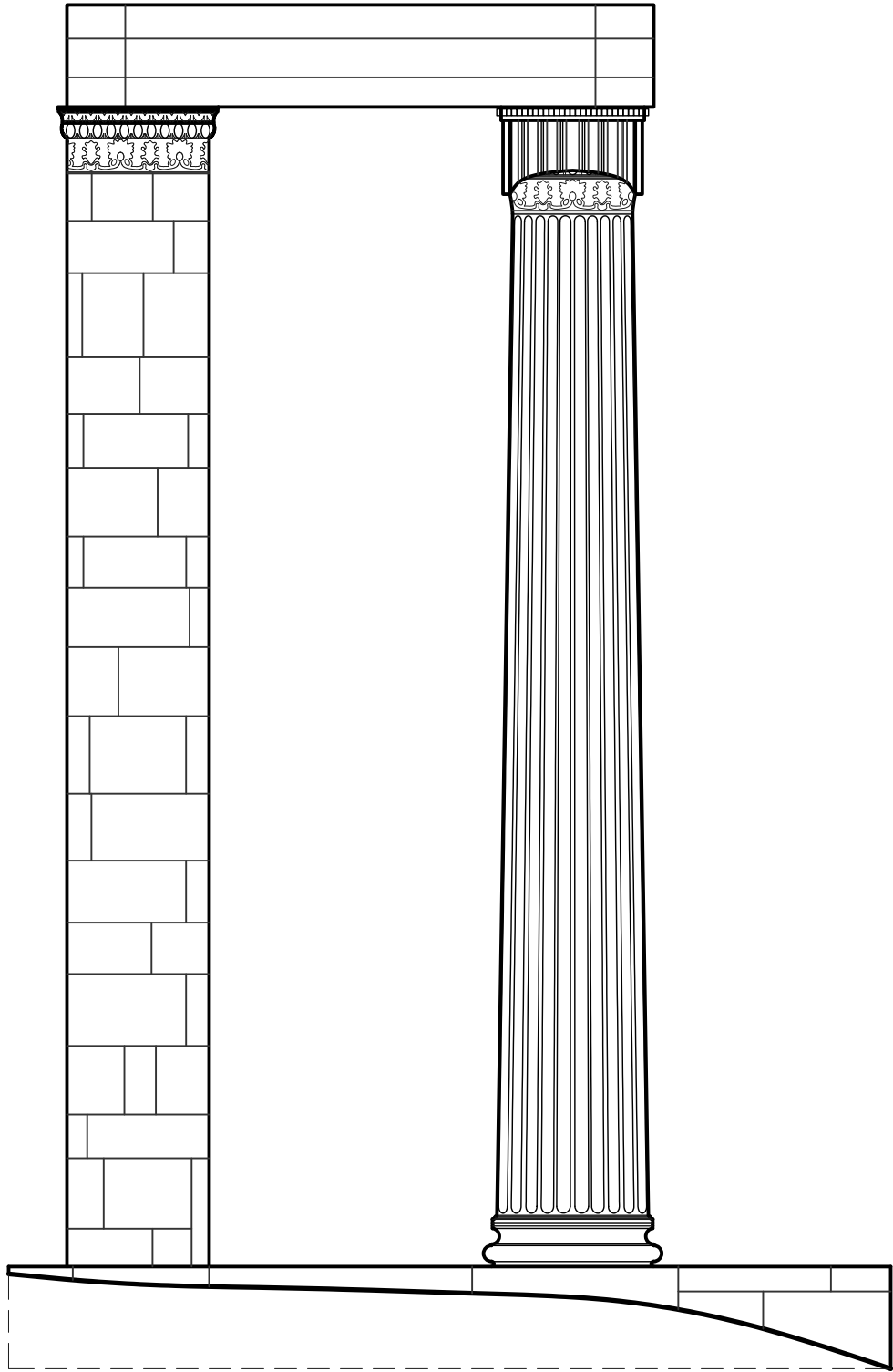
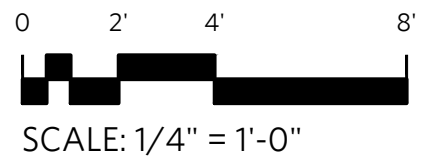


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