PROJECT MANUAL

CITY OF BEAFORT –
ARSENAL WINDOW RESTORATION

PROJECT NO. 2019-107

MEADORS, Inc.

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Bid Set
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1.1 DESIGN PROFESSIONALS OF RECORD

BUILDING ARCHITECT	**Betty Prime** **SC #8919** **Architectural Sections in Divisions 01 – 14; Section 313116**

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Project information.
   2. Work covered by Contract Documents.
   3. Work by Owner.
   4. Regulatory requirements.
   5. Access to site.
   6. Coordination with occupants.
   7. Work restrictions.
   8. Specification and drawing conventions.

B. Related Requirements:
   1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Beaufort Arsenal/Beaufort History Museum
   1. Project Location: 713 Craven Street, Beaufort, South Carolina 29902.

B. Owner: City of Beaufort
   1. Owner's Representative: Paul McGee

C. Architect: Meadors, Inc., PO Box 21758, Charleston, SC 29413.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:
The Beaufort Arsenal is an iconic local historic site and a major contributing structure in the City of Beaufort's National Historic Landmark District. The scope of work for this project includes window restoration, stucco repair adjacent to windows, and an alternate for restoration of two doors.

B. Type of Contract:
   1. Project will be constructed under a single prime contract.

1.5 REGULATORY REQUIREMENTS

A. Conform to requirements of all authorities having jurisdiction.

B. Standards for Historic Properties: All work shall comply with the Secretary of the Interior's "Standards for the Treatment of Historic Properties."

1.6 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work outlined in drawings. Do not disturb portions of Project site beyond areas in which the Work is indicated.
   1. Driveways, Walkways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
      a. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Owner to provide key(s) to access the site.

D. Condition of Existing Building: Maintain portions of existing building affected by construction operation throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

A. Owner Limited Occupancy of Completed Areas of Construction: The Arsenal is to remain open during construction. Maintain existing exits unless otherwise indicated.
   1. Maintain access to existing walkways, corridors and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors or other occupied or used areas without written permission from Owner and approval of authorities having jurisdiction.
   2. All entrances and exits are to remain clear at all times so patrons and staff can come and go unimpeded. Active work areas are to be delineated by appropriate cautionary tape or like signage.
   3. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations of adjacent properties.

1.8 WORK RESTRICTIONS

A. The project is partially funded by a grant. The grant completion date is March 2020.

B. Work Restrictions, General: Comply with restrictions on construction operations.
   1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

C. Tenant Hours of Operation:
   1. Museum open M-Sat. 10:00 AM - 4:00 PM
   2. Visitors Center open M-Sat. 9:00 AM – 5:00 PM

D. On-Site Work Hours: The Arsenal is to remain open during construction.
   1. Monday - Friday work hours between 7:30 AM – Dark
   2. Weekend Hours: Saturday 8:30 AM – 5 PM. Notify owner in advance when planning to work Sundays. No load noises on Sundays due to proximity to Churches. Confirm that weekend work hours do not conflict with special events held on site.
   3. Hours for Core Drilling and Other Noisy Activity: 8:00 AM -10:30 PM

E. Property surrounding the arsenal is not owned by the City of Beaufort (with the exception of the Carnegie Library). Synagogue property adjacent to the Chamber of Commerce should not be used for material laydown. The surrounding properties must be returned to their current condition at the close of construction.

F. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner.

G. Cleanup: Job site shall remain litter- and debris-free at all times. It shall be contractor's responsibility to clean both interior and exterior work sites thoroughly at the end of each workday. It is allowable to use the dumpster on site for disposal of debris and trash. The Arsenal is to remain open during construction.

H. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances.

I. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
   2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Document Interpretation: In the case of conflicts or discrepancies between drawings and Divisions 02-49 of the specifications, or within or among the Contract Documents and not clarified by Addendum, the most stringent requirement shall apply.
   1. Note: None of the documents included in the drawing index are intended to be considered in isolation of one another.
   2. All bidders, sub-bidders, contractors, and sub-contractors shall utilize complete sets of the bidding and/or Construction Documents in quantifying and construction. Neither the owner nor architect assume responsibility for errors, omissions, or misinterpretations resulting from the use of incomplete sets of bidding and/or construction documents.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
   1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
   2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
   3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Unit cost allowances.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.4 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 LUMP-SUM AND UNIT COST ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner under allowance and shall include taxes, freight, and delivery to Project site.

B. Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 UNUSED MATERIALS

A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1 – Exterior Window Sash Replacement: Include sash replacement contingency. Construction Drawings call for replacement of seventeen (17) sash. Provide contingency for replacement of six (6) additional sash. Allowance to be included in base bid submitted by the contractor.

END OF SECTION 012100

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1 – Sash Replacement:

1. Description: Replace deteriorated sash with new in-kind sash.
2. Unit of Measurement: one (1) window sash
3. Included in Base Bid: Twenty-three (23) window sash (seventeen (17) specified in construction drawings, six (6) additional sash specified in allowance contingency.

END OF SECTION 012200

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
   2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Window Film (museum space only)
   1. Base Bid: Temporarily remove plastic covers. Reinstall after window restoration.
   2. Alternate: Remove plastic covers. Salvage for owner. Install new 3M Climate Control 75 Film on interior of windows #3-11 and #20-28 (sash and arched transom). Film must be installed by certified installer.
   3. State amount to ADD.

B. Alternate No. 2: Door Restoration

   1. Base Bid: None
   2. Alternate: Restore two (2) access doors and side panels complete, including jamb and trim. Interior and exterior sides to be restored. Paint complete (interior and exterior sides). Clean and paint hinges. Prime hinges with rust inhibiting primer. Existing hardware to remain.
   3. State amount to ADD.

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions after award of Contract.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit one copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use facsimile of form provided in Project Manual.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication, or installation cannot be provided, if applicable.
b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Requested substitution provides sustainable design characteristics that specified product provided.
c. Substitution request is fully documented and properly submitted.
d. Requested substitution will not adversely affect Contractor's construction schedule.
e. Requested substitution has received necessary approvals of authorities having jurisdiction.
f. Requested substitution is compatible with other portions of the Work.
g. Requested substitution has been coordinated with other portions of the Work.
h. Requested substitution provides specified warranty.
i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

COMPLETE AND SUBMIT THIS FORM FOR APPROVAL OF SUBSTITUTES. SUBMISSION SHALL BE MADE IN DUPLICATE FOR EACH PROPOSED SUBSTITUTE ITEM.

SUBSTITUTION REQUEST FORM

TO: Betty Prime, Meadors, Inc., betty@meadorsinc.com

PROJECT: Beaufort Arsenal Window Restoration Project

We submit for your consideration the following product instead of the specified item for the above project:

Section	Paragraph	Specified Item
_____	_____	_____

Proposed Substitution: _____

Attach complete technical data, including laboratory tests, if applicable.

Include complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

Fill in blanks below:

A. Does the substitution affect dimensions shown on the drawings?

Yes _____ No __

B. Will the undersigned pay for changes to building design, including engineering and detailing costs caused by the requested substitution?

Yes _____ No __

C. What effect does substitution have on other trades?

_____
_____
_____
_____

D. Differences between proposed substitution and specified item?

_____
_____
_____
_____

E. Manufacturer's guarantees of proposed and specified items are:

Same ___ Different (Explain on Attachments)

The Undersigned states that the function, appearance, and quality are equivalent or superior to the specified item.

Submitted by:

_____
Signature

_____
Firm

_____
Address

_____

Date: _____ TEL/FAX: _____

For Use by Design Consultant

___ Accepted ___ Accepted as Noted
___ Not Accepted ___ Received Too Late

By: _____

Date: _____

Notes: _____

Attachment to Section 00120 - Supplementary Instructions to Bidders

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on Owner approved form.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. Change Directive: Architect may issue a Change Directive on AIA Document G714. Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:
   1. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
   2. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   3. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule. Gantt Chart may serve to satisfy requirements for the schedule of values.
   1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with continuation sheets.
      b. Submittal schedule.
      c. Items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to Architect at earliest possible date, but no later than seven (7) days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one-line item for each Specification Section.
   1. Identification: Include the following Project identification on the schedule of values:
      a. Project name and location.
      b. Name of Architect.
      c. Architect's project number (18-0125).

d. Contractor's name and address.
e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator/supplier.
   e. Change Orders (numbers) that affect value.
   f. Dollar value of the percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Each item in the schedule of values and Applications for Payment shall be complete.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
   1. Submit draft copy of Application for Payment seven (7) days prior to due date for review by Architect.

A. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

B. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.

3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

C. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation.
3. Provide summary documentation for stored materials indicating the following:
   a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
   b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
   c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

D. Transmittal: Submit one signed and notarized PDF copy of each Application for Payment to Architect by a method ensuring receipt within 24 hours. Include waivers of lien and similar attachments if required.
1. Transmit each copy with PDF transmittal form listing attachments and recording appropriate information about application.

E. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Certificates of insurance and insurance policies.
5. Performance and payment bonds.
6. Data needed to acquire Owner's insurance.
7. Progress and preconstruction photographs.

G. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

H. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements (maintenance documents, warranties, etc.).
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
   5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
   6. AIA Document G707, "Consent of Surety to Final Payment."
   7. Evidence that claims have been settled.
   8. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Requests for Information (RFIs).
3. Project meetings.

B. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Progress photographic documentation.
7. Pre-installation conferences.
8. Project closeout activities.

C. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1.6 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Architect.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.

11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: AIA Document G716 or similar software-generated form, acceptable to Architect.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven (7) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Use Log Form with not less than the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute an electronic copy of the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Trades:
    a. Carpentry (historic windows).
    b. Stucco (repairs around windows).

4. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Tentative construction schedule.
    b. Phasing.
    c. Critical work sequencing and long-lead items.
    d. Designation of key personnel and their duties.
    e. Lines of communications.
    f. Procedures for processing field decisions and Change Orders.
    g. Procedures for RFIs.
    h. Procedures for testing and inspecting.
    i. Procedures for processing Applications for Payment.
    j. Distribution of the Contract Documents.
    k. Submittal procedures.
    l. Preparation of record documents.
    m. Use of the premises and existing building.
    n. Work restrictions.
    o. Working hours.
    p. Owner's occupancy requirements.
    q. Responsibility for temporary facilities and controls.
    r. Procedures for moisture and mold control.
    s. Procedures for disruptions and shutdowns.
    t. Construction waste management and recycling.
    u. Parking availability.

v. Work, and storage areas.
w. Equipment deliveries and priorities.
x. First aid.
y. Security.
z. Progress cleaning.

5. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Progress Meetings: **Conduct progress meetings weekly. Expect daily site visits from the City's assigned project manager for the duration of the project. Architect will attend meetings at project milestones and at the request of the owner.**

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner and Architect, Contractor, subcontractor (at the discretion of the Contractor), and other concerned entities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Access.
6) Site utilization.
7) Temporary facilities and controls.
8) Progress cleaning.
9) Quality and work standards.
10) Status of correction of deficient items.
11) Field observations.
12) Status of RFIs.
13) Status of proposal requests.
14) Pending changes.
15) Status of Change Orders.
16) Pending claims and disputes.
17) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise monthly Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's construction schedule.
   2. Construction schedule updating reports.
   3. Site condition reports.
   4. Special reports.

B. Related Requirements:

   1. Section 013300 "Submittal Procedures" for submitting schedules and reports.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:
   1. PDF electronic file.

B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

   1. Submit a PDF electronic copy of schedule.

C. Construction Schedule Updating Reports: Submit monthly with Applications for Payment.

D. Daily Logs: Submit at the conclusion of the project, a copy of the log will be turned over to the City’s assigned project manager to memorialize the restorative effort.

E. Site Condition Reports: Submit at time of discovery of differing conditions.

F. Special Reports: Submit at time of unusual event.

1.4 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

   1. Secure time commitments for performing critical elements of the Work from entities involved.

2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities by location.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
5. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.

1. Work Restrictions: Show the effect of the following items on the schedule:
   a. Limitations of continued occupancies. The site will remain open for the duration of construction.
   b. Uninterruptible services.
   c. Contractor to minimize foot traffic on new roofs and stage work from the ground whenever possible. Contractor to protect newly installed roof surfaces when working on windows.
   d. Seasonal variations.

2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Submittals.
   b. Mockups.
   c. Disassembly.
   d. Installation.
   e. Tests and inspections.
   f. Curing.

3. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities.

D. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule with Critical Path: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule due (5 business days) before restoration work commences. Critical path is required.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments (by location) within time bar.

2.3 REPORTS

A. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.4 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute electronic copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect and Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. When revisions are made, distribute updated schedules to the same parties. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

C. At a minimum, reports and schedule to be submitted with pay applications monthly.

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Periodic construction photographs.
3. Final Completion construction photographs.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting photographic documentation.
2. Section 017700 "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.

1.3 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan in PDF or JPEG format of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation. Key plan required for preconstruction and final completion construction photographs.

B. Construction Photographs: Submit images within three days of taking photographs.

1. Digital Camera: Minimum sensor resolution of 8 megapixels.
2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
3. Identification: Name photos based on location and date. Example: “Perimeter Wall – North Elevation_02.16.18“

1.4 COORDINATION

A. Auxiliary Services: Cooperate with Owner or Architect’s photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.5 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date: Include date in file name for each image.

C. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.

1. Take a minimum of 50 photographs to show existing conditions adjacent to areas of construction before starting the Work.
2. All preconstruction photographs must be submitted and approved by Architect before any work begins.

D. Periodic Construction Photographs: Take a minimum of 20 digital photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.

E. Architect-Directed Construction Photographs: From time to time, Architect will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

F. Final Completion Construction Photographs: Take 50 color photographs after date of Substantial Completion for submission as project record documents. Vantage points should match preconstruction photographs.

1. Do not include date stamp.

G. Additional Photographs: Architect and Owner may issue requests for additional photographs, in addition to periodic photographs specified.

1. Three days' notice will be given, where feasible.
2. In emergency situations, take additional photographs within 24 hours of request.

3. Circumstances that could require additional photographs include, but are not limited to, the following:
    a. Immediate follow-up when on-site events result in construction damage or losses.
    b. Substantial Completion of a major phase or component of the Work.
    c. Extra record photographs at time of final acceptance.
    d. Owner's request for special publicity photographs.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Upon completion of Architect’s release form, electronic digital data files of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
b. Digital Drawing Format: Architect will provide Drawings in PDF format.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 7 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Resubmittal Review: Allow 7 days for review of each resubmittal.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner**,** containing the following information:

a. Project name.
b. Date.
c. Name and address of Architect.
d. Name of Contractor.
e. Name of firm or entity that prepared submittal.
f. Names of subcontractor, manufacturer, and supplier.
g. Category and type of submittal.
h. Submittal purpose and description.
i. Specification Section number and title.
j. Specification paragraph number or drawing designation and generic name for each of multiple items.
k. Drawing number and detail references, as appropriate.

l. Location(s) where product is to be installed, as appropriate.
m. Related physical samples submitted directly.
n. Indication of full or partial submittal.
o. Transmittal number, numbered consecutively.
p. Submittal and transmittal distribution record.
q. Other necessary identification.
r. Remarks.

E. Options: Identify options requiring selection by Architect.

F. Resubmittals: Make resubmittals in same form as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

G. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.

H. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Submit electronic submittals via email as PDF electronic files.

a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Action Submittals: Submit one PDF copy of each submittal unless otherwise indicated.
3. Informational Submittals: Submit one PDF copy of each submittal unless otherwise indicated.
4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. Submit Product Data before or concurrent with Samples.
5. Submit Product Data in the following format:

    a. PDF electronic file via email.

6. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

    a. Generic description of Sample.
    b. Product name and name of manufacturer.
    c. Sample source.
    d. Number and title of applicable Specification Section.
    e. Specification paragraph number and generic name of each item.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work are the property of Owner.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

D. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

E. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."

F. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

G. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person as required in the Contract Documents.

H. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

I. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

J. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

K. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

L. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

M. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

N. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

1. . Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date

of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

B. Informational Submittals: Architect will review each submittal and will return it, or will not return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

SECTION 013591- HISTORIC TREATMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This project involves the restoration of historic windows. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.

B. Section includes general protection and treatment procedures for designated historic spaces, rooms, areas, and surfaces in the entire Project, including general project guidelines, selected historic preservation resources and the following specific work:

1. General Historic Treatment Procedures.
2. Historic removal and dismantling.

C. Codes and standards set forth by:
1. All work shall be performed in accordance with the “Secretary of the Interior’s Standards for Preservation, “U.S. Department of the Interior, National Park Service, 1995.”

1.3 REFERENCES

A. United States Department of the Interior, Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings.

B. United States General Services Administration: Historic Preservation Technical Procedures.

C. National Park Service Historic Preservation Briefs
1. Preservation Brief 9: The Repair of Historic Windows
2. Preservation Brief 16: The Use of Substitute Materials on Historic Building Exteriors
3. Preservation Brief 17: Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character
4. Preservation Brief 22: The Preservation and Repair of Historic Stucco

1.4 DEFINITIONS

A. Consolidate: To strengthen loose or deteriorated materials in place.

B. Dismantle: To disassemble and detach items by hand from existing construction to the limits indicated, using small hand tools and small one-hand power tools, so as to protect nearby

historic surfaces; and legally dispose of dismantled items off-site, unless indicated to be salvaged or reinstalled.

C. Existing to Remain: Existing items that are not to be removed or dismantled.

D. Historic: Spaces, areas, rooms, surfaces, materials, finishes, and overall appearance which are important to the successful preservation, conservation, restoration, and reconstruction as determined by the Owner and Architect. Designated historic spaces, areas, rooms, and surfaces may be indicated on drawings.

E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by the Owner or Architect.

F. Reconstruct: To remove existing item, replicate damaged or missing components, and reinstall in original position.

G. Refinish: To remove existing finishes to substrate and apply new finish to match original or as otherwise indicated.

H. Reinstall: To protect removed or dismantled item, repair and clean it as indicated for reuse, and reinstall it in original position, or where indicated.

I. Remove: Specifically, for historic spaces, areas, rooms, and surfaces, the term means to detach an item from existing construction to the limits indicated, using hand tools and hand-operated power equipment, and legally dispose of it off-site, unless indicated to be salvaged or reinstalled.

J. Repair: To correct damage and defects, retaining existing materials, features, and finishes while employing as little new material as possible. Includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

K. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.

L. Replicate: To reproduce in exact detail, materials, and finish, unless otherwise indicated.

M. Reproduce: To fabricate a new item, accurate in detail to the original, and in either the same or a similar material as the original, unless otherwise indicated.

N. Restore: To consolidate, replicate, reproduce, repair, and refinish as required to achieve the indicated results.

O. Retain: To keep existing items that are not to be removed or dismantled.

P. Reversible: New construction work, treatments, or processes that can be removed or undone in the future without damaging historic materials, unless otherwise indicated.

Q. Salvage: To protect removed or dismantled items and deliver them to Owner.

R. Stabilize: To provide structural reinforcement of unsafe or deteriorated items while maintaining the essential form as it exists at present; also, to reestablish a weather-resistant enclosure or to stabilize loose or detached original material in an effort to halt deterioration or future loss of historic material

S. Strip: To remove existing finish down to base material, unless otherwise indicated.

1.5 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, artifacts, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during removal and dismantling work remain Owner's property. Carefully dismantle and salvage each item or object.

B. Coordinate with Owner's representative, who will establish special procedures for dismantling and salvage.

1.6 SUBMITTALS

A. Historic Treatment Qualifications: Submit documentation of past project experience that meet the work experience outlined in the RFP and specifications.

1.7 REGULATORY REQUIREMENTS

A. Comply with governing EPA notification regulations before beginning removal and dismantling work. Comply with hauling and disposal regulations of authorities having jurisdiction. The required research report and manufacturer's data shall be on site and used for reference.
   1. Conform to all safety guidelines
   2. For Cleaning: Comply with municipal and Federal regulations governing cleaning, chemical waste disposal, scaffolding and protection of adjacent surfaces.

B. Standards: Comply with ANSI/ASSE A10.6.

C. Comply with all OSHA regulations and safety guidelines for scaffolding and protection.

1.8 SITE PROTECTION

A. Protect persons, surrounding surfaces of building, and building site from harm resulting from historic treatment procedures.

   1. Use only proven protection methods, appropriate to each area and surface being protected.
   2. Provide barricades, barriers, and temporary directional signage to exclude public from areas where historic treatment work is being performed.
   3. Contain dust and debris generated work and prevent it from reaching the public or adjacent surfaces.
   4. Protect floors and other surfaces along haul routes from damage, wear, and staining.
   5. Provide supplemental sound-control treatment to isolate work from other areas of the building.
   6. Provide protection against spreading water at or beyond the work area by sheeting and tarpaulins.
   7. Provide masking or covering on adjacent surfaces and permanent equipment. Secure coverings without the use of adhesive type tapes. Impervious sheeting which produces condensation should not be used.

B. All necessary precautions shall be taken to protect all parts of the historic building not being repaired from the effects of the work, including excessive amounts of water that should not be allowed to pond in any areas.

1.9 PROJECT CONDITIONS

A. General Size Limitation in Historic Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inches or more.

B. Conditions existing at time of inspection for pricing purpose will be maintained by Owner as far as practical.

C. If unanticipated asbestos is suspected, stop work in the area of potential hazard, shut off fans and other air handlers ventilating the area, and rope off area until the questionable material is identified. Re-assign workers to continue work in unaffected areas. Resume work in the area of concern after safe working conditions are verified.

D. Do not change sources or brands of materials during the course of the work.

E. Storage or sale of removed or dismantled items on-site is not permitted unless otherwise indicated.

1.10 GENERAL HISTORIC TREATMENT

A. The principal aim of any work must be to halt the process of deterioration and stabilize the item's condition. Repair is a second option which becomes necessary only where preservation is not sufficient to ensure mid- to long-term survival. Repair should always be based on the fundamental principal of 'minimal disturbance'. Follow the procedures approved in the historic treatment program.
   1. Retain as much existing material as possible; repairing and consolidating rather than replacing.
   2. Use additional material or structure to reinforce, strengthen, prop, tie, and/or support existing material or structure.
   3. Use reversible processes wherever possible.
   4. Use of traditional materials and historically accurate repair and replacement techniques.

B. Record existing work before each procedure (preconstruction) and progress during the work with digital preconstruction documentation photographs. Comply with requirements in Division 01 Section "Photographic Documentation."

C. Ensure supervisory personnel are present when historic preservation treatment work begins and during its progress.

D. Notify Architect of Record and Owner of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movements, or distortion.

E. Owner's approval is required for any change, addition or removal of historic structural fabric or historic property.

F. Where missing features are indicated to be repaired or replaced, provide features whose designs are based on accurate duplications rather than conjectural designs subject to the approval of the Owner and Architect.

G. Where work requires existing features to be removed or dismantled and reinstalled, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION (Not Used)

END OF SECTION 013591

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:
1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service from Existing System: Electric power from Owner's existing temporary source is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 QUALITY ASSURANCE

A. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

A. Field Offices, General: Field Offices are not allowed on site.

B. Dumpster: Dumpster is allowed to be placed in a parking space at 500 Carteret Street parking lot; approximately one block away. City does not have space adjacent to the building. Construction debris to be cleaned up nightly.

C. Sanitary Facilities: Contractor to provide portalet. Portalet to be placed at 500 Carteret Street parking lot. Location of portalet to be coordinated with owner prior to installation.

D. Storage: Storage not available on site. Storage box permitted at 500 Carteret Street parking lot.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with day to day operations of the arsenal and performance of the Work. Relocate and modify facilities as required by progress of the Work.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully. Provide a method to prevent solids such as stone, mortar, paint, residue from entering the drains and drain lines. Contractor shall be responsible for cleaning out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this contract.

C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

D. Sanitary Facilities: Provide portalet.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

G. Lighting: Provide temporary lighting that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

A. Parking: 1 on street parking space provided for construction personnel. Additional parking can be provided in the 500 Carteret Street parking lot.

B. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. All waste must be removed from site daily.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Section 011000 "Summary."

C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

D. Temporary Fire Protection:
   1. General: Develop and supervise an overall fire-prevention and protection program for personnel at Project site. Instruct personnel in methods and procedures. Post warnings and information.
      a. Follow fire-prevention plan and the following.
      b. Retain option Comply with NFPA 241 requirements unless otherwise indicated.
      c. Remove and keep area free of combustibles including, rubbish, paper, waste, and chemicals, except to the degree necessary for the immediate work.
      d. Prohibit smoking by all persons within the Project work and staging areas.
   2. Heat-Generating Equipment and Combustible Materials: Not allowed on site. Exception: Welding equipment for installation of internal gutters.
   3. Fire Extinguishers, Fire Blankets, and Rag Buckets: Maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire watch is trained in fire-extinguisher and blanket operation.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
   2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final completion procedures.
   3. Warranties.
   4. Final cleaning.
   5. Repair of the Work.

B. Related Requirements:
   1. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.
   2. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
   3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
      a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
   5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Advise Owner of pending insurance changeover requirements.
   2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   3. Complete startup and testing of systems and equipment.
   4. Perform preventive maintenance on equipment used prior to Substantial Completion.
   5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
   6. Advise Owner of changeover in heat and other utilities.
   7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
   8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   9. Complete final cleaning requirements, including touchup painting.
   10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
   1. Submit a final Application for Payment according to Section 012900 "Payment Procedures." All closeout documents must be submitted before final payment will be processed.
   2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
   3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
   1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.
   4. Submit list of incomplete items in the following format:
      a. PDF electronic file via email.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
   1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or

installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document. Submit via email.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Remove tools, construction equipment, machinery, and surplus material from Project site.
      d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
      e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
      f. Sweep concrete floors broom clean in unoccupied spaces.
      g. Clean transparent materials, including glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish glass, taking care not to scratch surfaces.
      h. Remove labels that are not permanent.
      i. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

j. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
k. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
1. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:
1. Section 017700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit PDF electronic files of scanned record prints.
2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit PDF electronic files of scanned record prints on thumb drive and two set(s) of prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. 3-Ring binder with tabbed divisions Including the following:
1. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications on thumb drive. Provide one printed copy for Owner.
2. Record Product Data: Submit annotated PDF electronic files and directories of each submittal on thumb drive. Provide one printed copy for Owner.

3. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal on thumb drive. Provide one printed copy for Owner.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Revisions to routing of piping and conduits.
    d. Actual equipment locations.
    e. Locations of concealed internal utilities.
    f. Changes made by Change Order or Change Directive.
    g. Details not on the original Contract Drawings.
    h. Field records for variable and concealed conditions.
    i. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with red-colored pen. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, scan a full set of record prints of the Contract Drawings, as follows:

1. Format: PDF electronic file with comment function enabled via email for initial review submittal.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled via email. Provide three printed copies for Owner.
3. Record Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file on thumb drive. Provide one printed copy for Owner.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file on thumb drive. Provide one printed copy for Owner.

C. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file on thumb drive. Provide one printed copy for Owner.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 040513 – MORTARS FOR STRUCTURAL REPAIRS AND REPOINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 013591: Historic Treatment Procedures

C. Section 090120: Stucco Repairs and Replacement

D. Codes and Standards set forth by:

1. Preservation Brief #1, “The Cleaning and Waterproof Coating of Masonry Buildings” as published by the US National Park Service.
2. Preservation Brief #2, "Repointing Mortar Joints in Historic Buildings" as published by the U. S. National Park Service.
3. Brick Institute of America Applied Standards

1.2 SUMMARY

A. Work includes, all labor, materials, equipment, and services necessary to complete the work of repointing mortars as shown in the Drawings, and as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but is not necessarily limited to, the following:

1. Repointing of historic brick masonry substrate below damaged stucco
   a. Contactor is responsible for repairing stucco, brick, and mortar damage caused by contractor during the process of restoring the windows only.

B. Related Sections:
1. Section 013591 “Historic Treatment Procedures”.
2. Section 090120 “Stucco Repairs and Replacement”.

1.3 SCOPE

A. Provide all labor and materials to repair and restore masonry elements as specified herein and as detailed on the Drawings.

1.4 PROJECT CONDITIONS

A. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.

B. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

C. The Contractor shall coordinate masonry repointing with the other trades involved in exterior restoration work.

1.5 ENVIRONMENTAL CONDITIONS

A. General: Perform work only when temperature of products being used and air temperature and humidity comply with the manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.

B. Take precautionary measures necessary to assure that excessive temperature changes do not occur.

C. Cold Weather Limitations on Use of Mortars: Do not mix or use mortars when air or masonry temperature is below 45 deg F or when it is expected to drop below 45 deg F within 72 hours of mortar application.

D. Hot Weather Limitations: Protect fresh mortar from rapid drying when temperature, humidity, and wind conditions might cause rapid drying of mortar.

1. If ambient the air temperature exceeds 85 deg F or exceeds 80 deg F with a wind velocity greater than 8mph, flush mixer, transport container, and boards with cool water before they come into contact with the mortar ingredients. Maintain temperature of mortar below 120 deg F and use fresh mortar within 2 hours of initial mixing.
2. Limit spread of beds to 4ft when temperatures exceeds 85 deg F or exceeds 80 deg F with a wind velocity greater than 8mph

E. If masonry work must be done when ambient temperature is freezing, or below, all masonry material must be at temperature between 50 degrees Fahrenheit and 85 degrees Fahrenheit, and the mortar, when used, shall have a temperature between 60 and 80 degrees Fahrenheit. In addition, all masonry shall be protected from temperatures below 40 degrees Fahrenheit for at least 72 hours after being laid. Heat for heating materials and heated temporary enclosures will be provided by Contractor.

F. Antifreeze admixtures will not be allowed in the mortar. No frozen work shall be built upon. No masonry unit having a film of frost on its surface shall be installed in the work. Any completed work found to be affected by frost shall be taken down and rebuilt.

1.6 QUALITY ASSURANCE

A. This structure is an historic building. The mortar work on this project is critical to the satisfactory execution of the work.
1. Work Experience: Contractor must have a minimum of five (5) years demonstrated experience working on projects of similar scope, that employed hydraulic lime mortars. Contractor to have a working knowledge of the Secretary of the Interior's Standards for Treatment of Historic Properties.
2. Source of materials: The Contractor shall not change sources or manufacturers of mortar materials during the course of the work.

1.7 SUBMITTALS

A. Qualifications: Contractor Qualifications: Submit documentation of contractors past project experience that meets the work experience outlined in the specification. Provide two (2) references from an architect/engineer/owner who has worked on a similar project, using natural hydraulic lime repointing mortars, with the offeror in the last five years.

B. Product Data: For each type of product indicated, included material descriptions and all product labels for each product used. Include all MSDS and Material Specifications for all products used.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site and store in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers, and which shall show grade, batch, and production data.

B. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign materials

C. Storage and Protection: All materials must be protected from rainwater and ground moisture, and from staining or intermixture with earth or other types of materials.

1. Sand
    a. Maintain sand at constant moisture content
    b. Cover pile when not in use
    c. Arrange pile for free drainage
    d. Do not use bottom portion of pile (wet or in contact with earth) in mortar
2. Lime
    a. Do not tarp or wrap materials so as to trap moisture or permit condensation to form
    b. Allow air to circulate freely around units
    c. Do not use bags that have been broken or exposed to moisture
3. Discard and remove from site deteriorated, contaminated materials, and products that have exceeded their restoration dates. Replace with fresh materials.
4. The contractor becomes responsible for the product at the time it is received.

D. Laws, Codes, and Regulations: Work of this Section shall comply with all applicable federal, state, and local laws, codes, and regulations.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Grade and Quality: Lime and aggregate shall conform to the requirements of this Section and shall be new, free from defects and of recent manufacture in date.

B. Prohibited materials: the following materials are strictly prohibited in all mortar specified in this section.

1. Antifreeze compounds or other admixtures
2. Air entraining agents

C. Hydraulic Lime Based Mortar

1. Natural Hydraulic Lime: NHL 3.5
   a. All containers shall be marked including manufacturing date and batch number. Manufacturer is required to maintain production-sampling procedures for each batch for quality control purposes. Samples of proposed materials for mock up panels at the site provided by the manufacturer.
2. Aggregate: Shall be a variable graded (coarse to fine) washed sand and shell matching the texture and range of sizes found in the original mortar. Natural or manufactured sharp sand, with at least four grades of sand forming a substantial part of the sand and no more than 1% of the particles smaller than grade 200. Clean, well-graded, sharp, angular crushed aggregate complying with the requirements for deleterious substances and soundness of ASTM C 144. Sand aggregate shall have a nominal top size of 2.38mm (No. 8 US sieve) with over 75% of the material having a diameter between 1mm (No. 16 US sieve) and 0.297mm (No. 50 US sieve).
3. Water: Shall be clean and free of acids, Alkalis or organic materials. If water must be transported or stored in a container, the container must not impart any chemicals to the water.

2.2 MORTAR MIXES

A. Repointing Mortar
   1. 1 part NHL 3.5
   2. 2.5 Parts aggregate

PART 3 - EXECUTION

3.1 PREPARATION

A. On exposed masonry, remove all deteriorated mortar by hand with a chisel and mallet. Do not use power tools. Chisels are to be the appropriate size to fit cleanly into mortar joints without damage to surrounding surfaces.

   1. Rake joints to a depth of 1.5 times the mortar joint width or to sound mortar.

B. Brush, vacuum, or flush joints to remove all dirt and loose debris. Loose or disintegrated mortar beyond the minimum depth shall be removed.

C. Removal of the mortar shall be done in a manner that does not score, chip, or otherwise damage masonry units or adjacent elements. Mortar should be removed cleanly from the masonry units, leaving square corners at the back of the cut.

D. Use a hand chisel to finish joints adjacent to door and window openings to avoid damage to frames and trim.

3.2 MIXING

A. All ingredients shall be measured by volume using pre-established uniform measure, rather than a less uniform measure such as a shovel.

B. Dry mix all dry materials

C. Mortar shall be mixed in an approved type power operated batch mixer. Mixing time shall be such as to produce a homogenous plastic mortar but shall not be less than five minutes; approximately two minutes of which shall be for mixing the dry materials and not less than three minutes for continuing the mixing after water has been added.

D. A minimum amount of water shall be used to produce a workable consistency for the mortar's intended purpose.

E. Mortar for repointing shall be as dry a consistency as will produce a mortar sufficiently plastic to be worked into the joints and to hang onto a trowel. Record the amount of water used so that it may serve as a guide for future batches.

F. After mixing, mortars shall sit for 20 minutes prior to use to allow for initial shrinkage. Mortar shall be placed in final position within 2 ½ hours of mixing. Retempering of hardened material shall not be permitted.

3.3 INSTALLATION

A. Repointing of Masonry to be Covered by Stucco

1. Use only clean tools and equipment, free from hardened or partially hardened materials.
2. Dampen masonry prior to repointing to reduce suction of water from the mortar and shrinkage cracks. Do not fully saturate masonry. Substrate shall be glistening.
3. Repoint localized areas in which the mortar has been removed more than 5/8" in depth.
4. In all cases, the mortar joint shall not be left less than 5/8" from the face of the brick prior to stucco rehabilitation work.

3.4 CURING

A. Curing:
1. Protect completed work from adverse weather, heavy rainfall, freezing, and drying by direct sunlight and winds until cured.
2. If ambient the air temperature exceeds 100 deg F or exceeds 90 deg F with a wind velocity greater than 8mph, fog spray all newly applied mortar until damp, a minimum of three times a day for 3 days following application.
3. Shield from direct sun and drying winds for the first 72 hours after installation.

3.5 CLEAN UP

A. Maintain clean surfaces on the face, sills, ledges, and projections of masonry on a daily basis.

B. With a trowel, strike off minor dabs of adherent mortar from face of masonry.

C. Remove minor mortar marks from masonry by misting with water and brushing with a small, stiff-bristle brush.

END OF SECTION 040513

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Joint sealants.

1.3 ACTION SUBMITTALS

A. Product Data & MSDS Sheets: For each joint-sealant product indicated.

B. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

C. Warranties: Sample of special warranties.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

1.5 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.

2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period for Urethane Sealants: 5 years from date of Substantial Completion.

2. Warranty Period for Silicone Sealants: 20 years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

C. Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Joint Sealant Material (Wood to Wood): Sealant to be paintable.
   1. Exterior
      a. Sashco Big Stretch Sealant
      b. An approved equal
         NOTE: Sealants must be primed

2.4 URETHANE JOINT SEALANTS

A. Joint Sealant Material (Wood to Metal) (Metal to Stucco)(Wood to Stucco):
   1. Exterior
      a. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
         1) Sika Corporation, Inc.; Sikaflex - 1a
         2) BASF Building Systems; Sonolastic NP1.
         3) Tremco; Vulkem 116.

2.5 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or other type, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests. Prime all joint substrates unless indicated otherwise in writing by the Architect.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or other type, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

E. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Before commencement of work, carefully examine all surfaces to receive work and notify the Architect in writing of any conditions detrimental to the performance of this work. Do not proceed until unsatisfactory or deteriorated conditions have been inspected, corrected and are acceptable to the Architect and the applicator. Commencement of work will be construed as the applicator's acceptance of all surfaces. Commencement of the work prior to the Architect's inspection and acceptance is done at the applicator's risk.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form-release agents from concrete.

4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

F. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping. Do not pull or stretch material. Produce seal continuity at ends,

turns, and intersections of joints. For applications at low ambient temperatures, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

SECTION 080352 – HISTORIC TREATMENT OF WOOD WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 099000: Architectural Coatings

C. Codes and standards set forth by:

1. Preservation Brief #6, "The Repair of Historic Wooden Windows" as published by the U. S. National Park Service.
2. All work shall be performed in accordance with the “Secretary of the Interior’s Standards for Rehabilitation, “U.S. Department of the Interior, National Park Service, 1995.”
    a. Repair or replace, where necessary, deteriorated materials with new materials that duplicate old as closely as possible in appearance, color, and texture.
    b. Retain original material wherever possible.

1.2 SUMMARY

A. Work includes, but is not necessarily limited to, the following:
1. All Windows.
    a. Repair and restore all windows complete including but not limited to all damaged, deteriorated, and/or missing wooden elements (sills, sash, arched transom, jamb, casing, stool, and trim), and hardware. Existing glass is unbroken and scheduled to be retained. All upper window sashes will be fixed. Upper window sashes will be operable. It is the intention to retain as much historic material as possible.
    b. New weather-stripping to be added to all windows.
    c. Glazing putty to be removed complete. New glazing putty to be installed complete.
    d. Temporarily remove all plexiglass covers in museum space and reinstall following window restoration. Method of attachment should match existing.

1.3 DEFINITIONS

A. Restoration: The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.

B. Restore: To consolidate, replicate, reproduce, repair, and refinish as required to achieve the indicated results.

1.4 SCOPE

A. General: Provide all labor, materials, equipment, and services required to complete wood window restoration as specified herein and required by existing conditions and authorities having jurisdiction.

B. Wood window restoration may include, but is not limited to, the following:

1. Temporarily remove all plexiglass covers and attachment systems and reinstall following window restoration.
2. Restore damaged window sash and transoms while maintaining current profiles. Sash are required to be removed for restoration.
3. Restore all window trim, casings, jambs, and interior stools to sound condition and appearance.
4. **Windows with added elements and/or inappropriate repairs shall be returned to original appearance. Previous repairs that deviate from original details to be removed and appropriate repairs executed in accordance with the specifications. Final determination of repairs in question will be made by the architect. Note: Many inappropriate repairs were identified on the window jambs and arched transoms. All elements of the jamb and casing to be in plane with original materials.**
5. Repair, restore, consolidate or repair deteriorated wood sills and framing members as approved by Architect.
6. Install temporary protection with adequate weatherproofing where sash and other window elements are to be removed.
7. Existing glass is to be retained.
8. Remove all glazing putty and replace with new glazing putty.
9. Install new weather-stripping on all windows. Vinyl weatherstripping to be set in appropriate groove. Notify Architect if felt weatherstripping cannot be installed at the mid-rail without modifying the sash.
10. All repaired wood must be primed before assembly and installation as specified by Section 099000 Architectural Coatings.
11. Reinstall repaired window sash. Upper sash shall remain fixed. Lower sash to be operable.
12. Paint and finish all wood elements as necessary including those disturbed during work in this section to match original finishes.
13. Clean all glass.
14. Restore existing window hardware and provide new in-kind window hardware where existing hardware is missing or is too damaged or deteriorated to be restorable. Architects approval is required where hardware must be replaced.

C. Intent: It is the specific intent of this Section that repairs will maximize the retention of historic fabric while making the windows weather resistant for long-term use and serviceable for cyclical maintenance.

1.5 SUBMITTALS

A. Prior to application, submit to the Architect for approval the following:
1. Product Data: Submit product data and applicable MSDS sheets for all materials specified within this section.
2. One window must be disassembled in presence of Architect on site prior to start of work. Approval of Architect is required before the start of window restoration work.
3. Contractor Qualifications: Submit documentation of contractor's past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers.
4. Lead Tradesman Qualifications: Submit resume for lead carpenter. Must have a minimum of five (5) years demonstrated experience restoring historic windows.

1.6 PROJECT CONDITIONS

A. Do not install products that are wet, moisture damaged, or contaminated.

B. The Contractor must create a catalog of all items removed site with a template approved by the Architect prior to removal. Template shall include a description of each item, location in structure, date of removal, location to which item was removed to, and date of return to the site.

C. Protect windows from damage or deterioration until time of substantial completion.

D. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.
   1. Ensure that building interior remains watertight and weathertight while renovating existing spaces. Special cares should be taken in the museum to protect collections.

E. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

1.7 ENVIRONMENTAL CONDITIONS

A. General: Perform work only when temperature of products being used and air temperature and humidity comply with the manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.

1.8 QUALITY ASSURANCE

A. This structure is an historic building. The window restoration work on this project is critical to the satisfactory execution of the work.
   1. Work Experience:
      a. Contractor must have a minimum of five (5) years demonstrated experience working with historic windows and are thoroughly experienced with materials and methods specified. Contractor to have a working knowledge of the Secretary of the Interior's Standards for Treatment of Historic Properties.
      b. Supervisor and/or lead carpenter must have a minimum of five (5) years demonstrated experience restoring historic windows.
         1) Lead carpenter cannot be changed without approval by the Architect.

B. Laws, Codes, and Regulations: All work of this Section shall comply with all applicable federal, state, and local laws, codes, and regulations.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site and store in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers, and which shall show grade, batch, and production data.

B. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign materials

C. Replacements: In the event of damage to the products, immediately make all repairs and replacements at no additional cost to the Architect.

PART 2 - PRODUCTS

2.1 Materials

A. STANDARDS: American Softwood Lumber Standard PS20 American Plywood Association, American Wood Preservers Bureau Standards. AWI Architectural Woodwork Quality Standards

B. Window Sash and Transoms: Sapele shall be used for all new and replacements pieces.

C. Window Casing, Jamb, and Trim: Sapele shall be used for all new and replacements pieces.

D. Window Sills: Sapele shall be used for all new and replacement sills.

E. Interior Stool: Poplar shall be used for all new and replacement sills. Dutchman to be reclaimed heart pine material or sapele.

F. Replacement Hardware: Replace existing damaged or missing hardware with new hardware manufactured by one of the following:

1. Manufacturers:
    a. Architectural Resource Center
    b. Bronze Craft Corporation
    c. Phelps Company
    d. Baldwin
    e. An approved equal
2. Hardware Finish: Solid Brass, uncoated

G. Exterior Fasteners: All exterior fasteners shall be stainless steel grade 304 or better.

H. Wood Filler

1. Use a Bisphenol A based low viscosity liquid epoxy resin with appropriate hardener that cures to a high strength plastic solid under room temperatures.
2. Epoxy to hardener ratio shall not exceed 5:1
3. Product shall be specifically designed to bond with historic wood fiber and must be able to be sanded and shaped when cured.
    a. Manufacturers:
        1) West System
        2) An Approved equal

I. Wood Consolidant

1. Use a Bisphenol A based low viscosity liquid epoxy resin (unthickened) with appropriate hardener that cures to a high strength plastic solid under room temperatures.
2. Epoxy to hardener ratio shall not exceed 5:1
3. Product shall be specifically designed to bond with historic wood fiber and must be able to be sanded and shaped when cured.
    a. Manufacturers:
        1) West System
        2) An Approved equal

J. Window Glazing Compound
1. Sarco DualGlaze Glazing Compound
2. Dap 33 Glazing Compound
3. An approved equal

K. Replacement Glass
   1. Double Strength Single Pane Annealed Float Glass.
      a. Thickness: 1/8”

L. Weather-stripping
   1. Meeting Rail: Gray wool felt with adhesive back (tape), min. 1”.
   2. Lower Sash: Conservation Technology, Inc.
      a. Sides: WS-74, color: white
      b. Bottom: WS-10, color: white

PART 3 - EXECUTION

3.1 PLEXIGLASS COVER REMOVAL

1. Temporarily remove all plexiglass covers. Reinstall covers following window restoration. Method of attachment should match existing. Plexiglass damaged or broken by the contractor during construction to be replaced at no additional cost to the owner.

3.2 GLASS REMOVAL

1. Existing glass scheduled to be retained. All existing glass is unbroken, except for a pane of transom glass in window #9 and one pane in window #33. Notify Architect within the first 10 working days if conditions vary. Glass broken by the contractor during restoration to be replaced at no additional cost to the Owner.
2. Label each pane of glass with location and orientation within the sash so that the historic glass can be returned to its original location and orientation. Use painters’ tape to label glass and consistently label on either interior or exterior to avoid confusion at reinstallation.
3. Remove all face glazing compound from each window sash.

3.3 WOOD WINDOWS

A. Sash Removal
   1. Remove all window components necessary for restoration and proper reinstallation.
   2. Identify and label each component that is to be removed and repaired for reinstallation with window opening designator and location in jamb. Record numbers and locations of components.
   3. Remove adjacent elements as required to modify or replace elements of window jambs, heads, and sills that must be altered to accommodate restored window sash. Use all care necessary to prevent damage or deterioration of elements removed and elements remaining in place.
   4. To minimize breakages, paint lines at the edges of window stops must be cub/scribed first with a putty knife or a sharp knife before moldings are removed.
   5. Remove interior vertical stop beads on either side of the window.
   6. Carefully remove sash from window. Sash are required to be removed for restoration.
   7. Label each sash removed during work so that it may be reinstalled in the proper location.
   8. Install temporary protection with adequate weatherproofing where sash and other window elements are to be removed.

B. Repair and Replacement of Existing Wood Window
   1. General: Replace parts of or entire wood window members where damage is too extensive to patch.
   2. Match existing detailing. Construct of sapele.

3. In kind replacement: Except as specifically indicated otherwise, provide replacement elements with configurations, profiles, dimensions and joinery exactly matching those of existing elements.
4. Machining and Surfacing: Machine and surface all new and replacement wood elements to provide smooth even surfaces without saw marks or plane marks. Wood with surface irregularities, including but not limited to scratches, saw marks, and plane knife marks, visible after finish has been applied will be rejected and shall be replaced with properly finished wood elements at no additional cost
5. Repair remaining depressions, holes, or similar voids with patch-type repairs.
6. All existing glass is to be retained. Glass broken by the contractor during restoration to be replaced.
7. Glazing: Re-glaze units prior to reinstallation. Glazing must be dry prior to applying paint. Note: It may take from several weeks to dry. Contractor to phase work accordingly.
8. All upper sashes to remain fixed. All lower sashes to be operable.
9. Install new weather-stripping on all windows. Vinyl weather-stripping to be set in appropriate groove. Notify Architect if felt weather-stripping cannot be installed at the mid-rail without modifying the sash.
10. Caulk upper sash shut on all windows to minimize air infiltration.

3.4 WINDOW PATCH-TYPE REPAIR

A. General: Patch wood members that are damaged and exhibit depressions, holes, or similar voids, and that have limited rotted or decayed wood.
   1. Remove sashes from windows before performing repairs.
   2. Verify that all surfaces are sufficiently clean and free of paint residue prior to patching.
   3. Treat wood members with a wood consolidant prior to application of patching compound. Coat wood surfaces by brushing, applying multiple coats until wood is saturated and refuses to absorb more material. Allow treatment to harden before filling void with patching compound.
   4. Remove Rotten or decayed wood down to sound wood.

B. Apply wood patching compound to fill depressions, nicks, cracks, and other voids created by removed or missing wood.
   1. Follow manufacturer’s written instructions for applying wood patching compound.
   2. Mix only as much patching compound as can be applied according to the manufacturer’s written instructions.
   3. Apply patching compound in layers as recommended by manufacturer until the void is completely filled.
   4. Finish patch surface to match contour of adjacent wood member. Sand patching compound smooth and flush, matching contour of existing wood member.

C. Hardware: Repair and retain existing hinges, locksets, and misc. hardware and return to good operating condition. Missing and damaged hardware to be replaced. Provide replacement elements that match configuration, dimensions, and finish of existing hardware.

3.5 SASH INSTALLATION

A. General: Install restored sash as per contract. At completion of installation, windows shall be complete with all components and with unblemished paint and finish coats.

3.6 ADJUSTING

A. General: Adjust operating sash and hardware to provide a tight fit at contact points and weather-stripping, if specified, and to provide smooth operation and a weathertight closure. Lubricate hardware and moving parts.

3.7 CLEAN UP

A. Protect window surfaces from contact with contaminating substances resulting from construction operations.

B. Clean interior and exterior window surfaces promptly after installation. Take care to avoid damage to historic and protective coatings and finishes. Remove excess sealants, glazing and patching materials, dirt, and other substances.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

D. Upon completion of wood window restoration, remove tools, equipment, and other unnecessary materials from site. Return adjacent area and surrounding property to the condition which existed prior to the start of work.

E. Remove and legally dispose off-site all debris, rubbish, and other materials resulting from operations of this section.

END OF SECTION 080352

SECTION 082000 – DOOR RESTORATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 0803520: Historic Treatment of Wood Windows

C. Section 099000: Architectural Coatings

D. Codes and standards set forth by:

1. "Guide to Preserving Historic Buildings: Wood" "U.S. Department of the Interior, National Park Service, 1995"
2. All work shall be performed in accordance with the "Secretary of the Interior's Standards for Rehabilitation, "U.S. Department of the Interior, National Park Service, 1995."

1.2 SUMMARY

A. Work includes, but is not necessarily limited to, the following

1. Restoration or replacement of damaged wooden elements, jamb, and trim of specified doors. Side panels adjacent to doors to be restored.

1.3 DEFINITIONS

A. Restoration: the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.

1.4 SCOPE

A. General: Provide all labor, materials, equipment, and services required to complete wood door restoration as specified herein and required by existing conditions and authorities having jurisdiction.

B. Wood door restoration may include, but is not limited to, the following:

1. Restore damaged wood doors while maintaining current profiles.
2. Restore all door trim, frames, and jambs to sound condition and appearance.
3. Restore all panels to sound condition and appearance.
4. Paint and finish all wood elements to match original finishes.
5. Clean and paint all hinges. Paint hinges with rust inhibiting primer.
6. Install temporary doors with adequate weatherproofing where door elements are to be removed.

C. Intent: It is the specific intent of this Section that repairs will maximize the retention of historic fabric while making the doors weather resistant for long-term use and serviceable for cyclical maintenance.

1.5 PROJECT CONDITIONS

A. Do not install products that are wet, moisture damaged, or contaminated.

B. The Contractor must create a catalog of all items removed site with a template approved by the Architect prior to removal. Template shall include a description of each item, location in structure, date of removal, location to which item was removed to, and date of return to the site.

C. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.

D. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

1.6 ENVIRONMENTAL CONDITIONS

A. General: Perform work only when temperature of products being used, and air temperature and humidity comply with the manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.

1.7 QUALITY ASSURANCE

A. Craftspeople: Wood door restoration shall be carried out by a crew of skilled craftspeople who are thoroughly experienced with materials and methods specified. Craftspeople and carpenters employed to carry out work must have a minimum of five years' experience working with historic building materials.

B. Laws, Codes, and Regulations: All work of this Section shall comply with all applicable federal, state, and local laws, codes, and regulations.

C. Submittals
   1. Product Data: For each material proposed to be furnished and installed under this portion of the Work. This shall in no way be construed as permitting substitutions of materials for those specified or approved for this Work by the Architect. All substitutions must be approved by architect prior to installation.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site and store in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers, and which shall show grade, batch, and production data.

B. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign materials

1. Storage procedures shall follow those specified in Section 015000 Temporary Facilities and Controls.

C. Replacements: In the event of damage to the products, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 Materials

A. STANDARDS: American Softwood Lumber Standard PS20 American Plywood Association, American Wood Preservers Bureau Standards. AWI Architectural Woodwork Quality Standards

B. Door Trim (exterior): Sapele shall be used for all new and replacement exterior trim.

C. Door Trim (interior): Poplar shall be used for all new and replacement interior trim.

D. Exterior Fasteners: All exterior fasteners shall be stainless steel grade 304 or better.

E. Wood Filler

1. Use a Bisphenol A based low viscosity liquid epoxy resin with appropriate hardener that cures to a high strength plastic solid under room temperatures.
2. Epoxy to hardener ratio shall not exceed 5:1.
3. Product shall be specifically designed to bond with historic wood fiber and must be able to be sanded and shaped when cured.

F. Wood Consolidant

1. Use a Bisphenol A based low viscosity liquid epoxy resin (unthickened) with appropriate hardener that cures to a high strength plastic solid under room temperatures.
2. Epoxy to hardener ratio shall not exceed 5:1
3. Product shall be specifically designed to bond with historic wood fiber and must be able to be sanded and shaped when cured.
    a. Manufacturers:
        1) West System
        2) An Approved equal

PART 3 - EXECUTION

3.1 GENERAL: DOORS

A. Match existing detailing.

B. In kind replacement: Except as specifically indicated otherwise, provide replacement elements with configurations, profiles, dimensions and joinery exactly matching those of existing elements.

C. Machining and Surfacing: Machine and surface all new and replacement wood elements to provide smooth even surfaces without saw marks or plane marks. Wood with surface irregularities, including but not limited to scratches, saw marks, and plane knife marks, visible after finish has been applied will be rejected and shall be replaced with properly finished wood elements at no additional cost

D. Existing Wood Doors: Repair and retain existing doors. All doors shall be adjusted to swing and lock properly.

E. Replacement Door Trim & Frame: Match existing or as detailed on drawings. Dutchman repairs shall be in kind.

F. Painting: Paint exterior doors, trim, frames, jambs, and side panels complete. Paint hinges complete.

3.2 CLEAN UP

A. Upon completion of wood door restoration, remove tools, equipment, and other unnecessary materials from site. Return adjacent area and surrounding property to the condition which existed prior to the start of work.

B. Remove and legally dispose off-site all debris, rubbish, and other materials resulting from operations of this section.

END OF SECTION 082000

SECTION 090120 – STUCCO REPAIRS AND REPLACEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Codes and Standards set forth by:

1. Preservation Brief #1, “The Cleaning and Waterproof Coating of Masonry Buildings” as published by the US National Park Service.
2. Preservation Brief #22, “The Preservation and Repair of Historic Stucco" as published by the U. S. National Park Service.
3. Conway, Brian D. “Illinois Preservation Series Number 2: Stucco.” Springfield, Illinois: Illinois Department of Conservation, Division of Historic Sites, 1980.
4. ASTM C10, Specification for Natural Cement

1.2 SUMMARY

A. Work includes, all labor, materials, equipment, and services necessary to complete the work of stucco repairs as shown on the Drawings, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but is not necessarily limited to, the following:

1. Repair stucco damage around windows.
    a. Contactor is responsible for repairing stucco, brick, and mortar damage caused by contractor during the process of restoring the windows only.
    b. Preparation of existing stucco to receive new work. Repointing masonry substrate as required.
    c. Application of stucco as specified.
    d. Finish new stucco to match existing.

B. Related Sections
1. Section 013591 “Historic Treatment Procedures”.
2. Section 040513 “Mortars for Structural Repairs and Repointing”.

1.3 SCOPE

A. Provide all labor and materials to repair and restore stucco as specified herein and as detailed on the Drawings.

1.4 PROJECT CONDITIONS

A. Protection of Building: Protect building elements and finishes from damage and from deterioration caused by work of this section.

1. Minimize levels of dust during stucco removal and application operations.

2. Protect open joints and other vulnerable areas from water penetration to prevent leakage during the course of the work. Open areas shall not be left exposed overnight or when inclement weather is predicted.
3. Protect adjacent work from moisture deterioration and soiling due to stucco rehabilitation work. Provide temporary coverings as required to prevent spattering of stucco on other materials.
4. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall provide that nearby vehicles and adjacent structures and foliage are protected from damage during the stucco rehabilitation work.
5. Contractor shall coordinate stucco work with the other trades involved in exterior rehabilitation work.

1.5 SEQUENCING AND SCHEDULING

A. Perform stucco repair work in the following sequence:

1. Remove plant growth.
2. Repair stucco with new stucco materials. Repoint masonry below stucco as required.
3. After repairs have been completed and cured, perform a final cleaning to remove residues from this work.
4. Prep surface and paint stucco following required curing.

1.6 ENVIRONMENTAL CONDITIONS

A. General: Perform work only when temperature of products being used and air temperature and humidity comply with the manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.

B. Cold Weather Limitations on use of stucco: Do not mix or use stucco when air or masonry temperature is below 40 degrees F or when it is expected to drop below 40 degrees F within 72 hours of stucco application. Protect work from freezing for not less than 72 hours after set of material has occurred.

C. When ambient air temperature is below 40 degrees F, heat mixing water to maintain stucco temperature between 40 and 120 degrees F until placed. If necessary, store materials in a heated area to allow stucco temperatures to remain above 40 degrees F throughout the placement and finishing cycle.

D. Hot Weather Limitations: Under hot, dry and windy conditions use proper pre-dampening, protection and moist curing procedures as required to keep stucco moist for 72 hours following final tooling.

1.7 QUALITY ASSURANCE

A. The Contractor shall not change sources or manufacturers of stucco materials during the course of the work.

B. Mock-Up: Before starting work, prepare and stucco a sample area of not less than 4 feet high and 4 feet long using the procedures, proposed colors and texture, finish and workmanship for approval by the Architect.

C. Work Experience: Contractor and lead mason to perform the work in this section shall have at least five (5) years demonstrated experience working with natural cement stuccos. Contractor to have a working knowledge of the Secretary of the Interior's Standards for Treatment of Historic Properties. Experience only in new stucco work is insufficient experience for work.

D. Submittals
   1. Qualifications: Submit documentation of mason's past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years that employed natural cement stuccos, including contact names and phone numbers. Submit resume of lead mason.
   2. Product Data, MSDS, and manufacturer's instructions for all specified materials used during the course of the work. Provide product literature that indicates that products meet or exceed specified requirements, and ingredients meet applicable ASTM standards.
   3. Submit stucco design mix.
   4. Prepare portable samples approximately 18 x 18 inches. Once a matching stucco sample has been approved by the Architect, on site mockup may begin.
   5. Pre-installation meeting shall be held to review extent of stucco repairs.

E. Approved test panels and samples shall become part of the finished work at the Contractor's option and shall establish the standard of quality expected through the remainder of the construction. The Contractor shall prepare up to three samples if required to obtain approval without additional compensation.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site and store in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers, and which shall show grade, batch, and production data.

B. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign materials

C. Storage and Protection: All materials must be protected from rainwater and ground moisture, and from staining or intermixture with earth or other types of materials.
   1. Do not tarp or wrap materials so as to trap moisture or permit condensation to form
   2. Allow air to circulate freely around materials
   3. Do not use bags that have been broken or exposed to moisture. Reseal open bags at the end of the work day in a manner to prevent moisture intrusion.
   4. Discard and remove from site deteriorated, contaminated materials and products that have exceeded their expiration dates. Replace with fresh materials.
   5. The contractor becomes responsible for the product at the time it is received.

PART 2 - PRODUCTS

2.1 MANUFACTURERES

A. Basis of Design: Otterbein Vicat Prompt Natural Cement and Tempo Admixture
   1. Approved Equal

2.2 MATERIALS, General

A. Grade and Quality: Materials shall conform to the requirements of this Section and shall be new, free from defects, and of recent manufacture

B. Natural Cement: Natural cement processed from argillaceous limestone and meeting the requirements of ASTM C10. Artificial mixtures of other cementitious materials, fly ash, slag, Portland cement, hydraulic lime or lime-pozzolan mixtures are not permitted as substitutes for natural cement.

C. Aggregate: ASTM C144 natural sand blend, rounded to sub-angular in shape, washed, screened and dried. Aggregate to be selected to match the color and texture of the original stucco aggregates as closely as possible while remaining in compliance with ASTM C144 grading and soundness requirements.

D. Stucco Colors: Inorganic mineral oxides meeting the requirements of ASTM C979, at levels not to exceed 10% on cement weight, except for carbon black, which may not exceed 2% on cement weight. Use of color pigments shall be limited to the minimum amount required to adjust stucco color and use of properly matched aggregates and natural cement matrix shall be the primary means of achieving color match.

E. Admixtures: NO admixtures shall be used without the express written consent of the Architect and the stucco manufacturer. Calcium chloride is not permitted in any stucco.

F. Water: Shall be clean and free of acids, Alkalis or organic materials. If water must be transported or stored in a container, the container must not impart any chemicals to the water.

2.3 STUCCO MIXES

1. Scratch Coat
    a. 1 Part Rosendale Natural Cement 10C
    b. 2 Parts Sand
    c. Enough water to form a workable consistency
2. Finish Coat
    a. 1 Part Rosendale Natural Cement 10C
    b. 2-3 Parts Sand (match texture of existing stucco)
    c. Enough water to form a workable consistency.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall hold a pre-installation meeting with the architect prior to starting repairs.

3.2 PREPARATION

A. Remove all loose, deteriorated, and severely cracked stucco to the masonry substrate. Remove stucco using hand tools. Do not use power tools. Avoid over sounding to prevent additional damage.

B. Probe areas of loose stucco to ensure no abandoned fasteners remain adhered to the masonry substrate

1. Remove abandoned fasteners that would impede successful patching of the stucco.

C. Square off large areas to receive new patching, back-beveling edges to receive new stucco. Where possible, square off patches to coincide with scoring lines on stucco surface.

D. Wash areas to be patched thoroughly with clean water to remove dust and loose debris prior to patching.

3.3 MIXING

A. It is recommended that a dust mask be worn during mixing.

B. All stucco shall be preblended, pre-colored and prepackaged under controlled factory conditions. All ingredients are to be batched within plus or minus 1% accuracy, except pigments which shall be weighed to a precision of 0.02%.

C. Thoroughly mix stucco in quantities needed for immediate use, using mechanical mortar mixer or paddle mixer. Add approximately half the required water and mix stucco for a minimum of 5 minutes, and then slowly add water as needed to reach the desired working consistency. Do not exceed mix time of 10 minutes.

D. Add only clean, potable water at the project site. Do not add sand, stone, cement, lime, bonding agents, coloring admixtures, set accelerators, plasticizers, air entraining admixtures or other materials unless specifically authorized in writing.

E. Use a batch type mixer in accordance with ASTM C270, Subparagraph 6.3.

F. Mixed stucco must be used before initial set, so mix only as much material as will be used within 10 minutes for quick-setting stucco, or within 30 minutes for regular setting stucco. Once material has begun to set, it should not be re-tempered or adjusted with additional water but should be discarded.

3.4 INSTALLATION

A. Stucco Repair by Patching

1. Ensure mortar joints are raked back to key new stucco. Rake out brick mortar joints to a minimum depth of ½”
2. Surface should be free of debris, dust, dirt, grease, oil, paint, and vegetation. Clean with a bristle brush. A clean surface is necessary to obtain a good bond between the stucco and substrate
3. Area should be cut on the diagonal and squared off with a butt joint to provide a neat patch. If necessary, and as reviewed by the Architect, it may be preferred to stucco the area of an entire feature.
4. New patch must not overlap existing stucco.
5. Pre-dampen masonry surfaces to receive stucco for a minimum of 20 minutes prior to stucco placement. Masonry surfaces should be saturated but free of excess or standing water at time of stucco placement. Substrate shall be glistening, and no standing water should remain during a new application.
6. Scratch coat: Fill joints and spread stucco to provide thin “bond coat” on the masonry surface.
7. Finish coat: A second, heavier application is then applied and finished immediately.

8. Stucco patches shall match the existing surface texture and tooling unless otherwise noted.
9. Allow stucco to fully cure before final cleaning. Longer cure times are required in cooler weather. Only low pressure should be used to avoid damaging new stucco. Only cleaning materials approved by the stucco manufacturer, and only at the approved rates of dilution and dwell time.
10. After initial cure, prepare surface and paint stucco.

3.5 CURING

A. Protect completed work from adverse weather, heavy rainfall, freezing, and drying by direct sunlight and winds until cured.

B. Once the material has been finished, it must be maintained in a damp condition throughout its curing period. Generally, this period of wet curing will be a minimum of 3 days, depending on conditions. Consult your manufacturer's technical representative for curing guidelines for your specific project conditions. Acceptable curing methods include draping burlap over the fresh stucco and maintaining the burlap in a damp condition, or frequent misting with water, or covering with polyethylene.

3.6 CLEANING

A. Remove temporary coverings used to protect adjacent surfaces from stucco spatter. Promptly remove stucco from surfaces which are not to be plastered. Repair surfaces which have been stained, marred or otherwise damaged during the stucco work. Remove unused materials, containers, equipment and debris after stucco work is complete.

B. After stucco is thoroughly cured and set, clean masonry surfaces, walls, sills, overhangs, etc.

3.7 PRODUCTION

A. Remove and replace all damaged products and materials that are wet, moisture damaged, or mold damaged.

END OF SECTION 090120

SECTION 099000 – ARCHITECTURAL COATINGS FOR HISTORIC SUBSTRATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 013959: Historic Treatment Procedures

C. Codes and standards set forth by:
1. All work shall be performed in accordance with the “Secretary of the Interior’s Standards for Rehabilitation, “U.S. Department of the Interior, National Park Service, 1995.”
2. "Standard (Type 1)" as defined by the Painting and Decorating Contractors of America in their "Modern Guide to Paint Specifications", current edition
3. MPI Standards:
   a. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
   b. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.
4. ASTM D16-03 “Standard Terminology for Paint, Related Coatings, Materials, and Applications”
5. **In addition to complying with all pertinent codes and standards, it shall be assumed that the existing painted surfaces of the windows are lead-based. Painting contractor shall be responsible for complying with all EPA, DHEC and OSHA standards concerning the safe removal, disposal and cleanup of any lead-based paint and the safety of the workers and people outside the work areas. All dust, debris and residue shall be contained within the work area. Painting contractor shall be certified by the EPA.**

1.2 SUMMARY

A. This project involves the restoration of historic windows. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.

B. Section includes historic treatment of plain painting as follows:

Paint building exterior in locations indicated on the Drawings. Locations include but are not limited to all windows (interior and exterior complete) and all areas disturbed by construction. Scope of work includes the following:
1. Preparing substrates.
2. Plain painting of exterior historic surfaces.
3. Plain painting of exterior wood.

C. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.

1. Do not paint prefinished items, finished metal surfaces, operating parts, and labels.

2. Do not alter, remove, or paint over historic finishes unless explicitly specified.

1.3 DEFINITIONS

A. “Paint” includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats

1.4 SUBMITTALS

A. Product Data: For each paint system indicated. Include block fillers and primers.

1. Provide manufacturers' technical information, label analysis, and application instructions for each material proposed for use.

B. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

C. Qualifications: Submit documentation of painters past project experience that meet the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers. Submit documentation of required Lead Awareness Training.

D. Samples. Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate.

1. Define each separate coat, including block fillers and primers. Use representative colors when preparing samples for review. Resubmit until required sheen, color, and texture is achieved.
2. Provide a list of materials and application for each coat of each sample. Label each sample as to location and application.

E. Closeout Documentation:
1. Contractor shall leave one can of each product used appropriately marked with details of location on the building.
2. Provide list of color names, numbers, and formulas.
3. Provide product warranties.

1.5 QUALITY ASSURANCE

1. Work Experience: A qualified painting specialist with five years’ expertise in painting wood substrates on historic buildings. Experience only in new painting work is insufficient experience for work. For manual lead paint disturbance, the painting specialist is required to have completed initial and annual OSHA compliant Lead Awareness Training. For mechanical lead paint disturbance, the painting specialist is required to have completed Renovation, Repair, and Painting Training.

B. Lead Based Paint: The areas to be prepared for repainting may contain paint from the early twentieth century and contain lead (Applies to Windows Only).

1. Take all necessary actions and precautions to assure safety of the public, property and the environment, and workers in scraping, sanding, removing and disposing of any existing paint;
2. Comply with applicable health, safety and environmental regulations of the Architect agencies having jurisdiction.

1.6 PROJECT CONDITIONS

A. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.

B. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

1.7 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period for Urethane Sealants: 5 years from date of Substantial Completion.
2. Warranty Period for Silicone Sealants: 20 years from date of Substantial Completion.

1.8 ENVIRONMENTAL CONDITIONS

A. The coating manufacturer’s requirements for ambient temperature, humidity, and ventilation during painting operations, and temperature of surfaces to receive a coating shall be strictly followed

B. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 degrees F.

C. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 95 degrees F.

D. Do not paint exterior when temperature is below 50° F when the surface is damp, or when temperature is likely to drop to freezing within 24 hours. Avoid painting when surface is exposed to hot sun or early morning dew.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

E. Comply with the manufacturer's recommendations as to environmental conditions under which the coating systems may be applied.

F. Do not apply paint in areas where dust is being generated.

G. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver all coating materials to site and store in manufacturer’s original unopened containers and packaging, bearing manufacturer’s name and label and the following information:

1. Product name or title of material
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.

B. Protection

1. Store only the approved materials on the job site and store only in a suitable and designated area restricted to the storage of paint materials. Space shall comply with the paint manufacturer’s requirements for storage temperature. Protect from freezing.
2. Use all means necessary to ensure the safe storage and use of paint materials and the prompt and safe disposal of waste.
3. Use all means necessary to protect paint materials before, during, and after application and to protect the installed work and materials of all other Trades.
4. Keep storage area neat and orderly. Remove oily rags and waste daily.

C. Replacements: In the event of damage to the products, immediately make all repairs and replacements at no additional cost to the Architect.

1. Order replacement materials at the earliest possible date, to avoid delaying completion of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Material Compatibility:
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

2.2 MODERN PAINT MATERIALS, GENERAL

A. Transition Coat: Paint manufacturer's recommended coating for use where a residual existing coating is incompatible with the paint system.

B. Products listed below represent materials that will likely be used for painting elements. This section assures quality of Work by listing regulatory language and by setting standards of quality for materials. Information from the testing shall guide product selection.

2.3 MANUFACTUERS

A. Manufactures: Provide best quality grade of paint as regularly manufactured by specified manufacturer. Primer coats must be produced by the same manufacturer as the top coats unless otherwise specified. Subject to compliance with requirements, provide products by one of the following or equivalent MPI listed manufacturer:

1. Benjamin Moore & Co.
2. Sherwin-Williams Co.
3. PPG Industries, Inc.
4. Or Approved Equal

B. Substitutions must be approved by Architect.

2.4 PREPARATORY MATERIALS

A. Pigments, thinners, and solvents used with any coating material shall be as recommended by the paint manufacturer for the particular product.

2.5 PAINT MATERIALS, GENERAL

A. Material Compatibility:

1. All paint and finishing materials shall be lead free.
2. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
3. For each coat in a paint system, provide products recommended in writing by manufactures of topcoat for use in paint system and on substrate indicated.
4. Colors: As selected by Architect from manufacture's full range.

B. Joint Sealant Material (Wood to Wood): Sealant to be paintable.

1. Exterior
   a. Sonneborn Sonolastic NP1 one component polyurethane
   b. Sashco Big Stretch Sealant
   c. An approved equal
      NOTE: Sealants must be primed

C. Joint Sealant Material (Wood to Metal) (Metal to Stucco)(Wood to Stucco):
1. Exterior
   a. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
      1) Sika Corporation, Inc.; Sikaflex - 1a
      2) BASF Building Systems; Sonolastic NP1.
      3) Tremco; Vulkem 116.

2.6 EXTERIOR WOOD PRIMER & PAINT

A. Exterior Wood Primer
1. Benjamin Moore Fresh Start Fast Dry Exterior Wood Primer (094)
2. Or an Approved Equal.

B. Exterior Wood Paint
   1. Benjamin Moore Aura Exterior Paint Semi-Gloss (632) (Windows)
   2. Or an Approved Equal

2.7 INTERIOR PRIMER & PAINT

A. Interior Primer
   1. Spectrum Paint Spec-Pro 3000 Interior Paint, Flat

B. Interior Paint
   1. Benjamin Moore Aura Interior Paint Semi-Gloss (632) (Windows)
   2. Benjamin Moore Aura Interior Paint, match existing sheen (Walls, as required for touch-up)
   3. Or an Approved Equal

PART 3 - EXECUTION

3.1 PAINTING, GENERAL

A. Execution of the Work:
   1. Remove failed coatings and repaint.
   2. Verify that substrate surface conditions are suitable for painting.
   3. Allow other trades to repair items in place and retain as much original material as possible before repainting.
   4. Install temporary protective measures to protect historic painted surfaces that shall be treated later.

B. Matching Existing Painted Surfaces:
   1. Color match existing painted surfaces to ensure new painting visually matches the existing coatings in color and sheen.

C. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use only the gentlest mechanical methods, such as scraping and lightly hand sanding, that will not abrade softer substrates, reducing clarity of detail. Do not use abrasive methods such as rotary sanding, rotary wire brushing, or power tools except as indicated as part of the historic treatment program and as approved by Architect.

D. Heat Processes: Do not use torches, heat guns, or heat plates.

3.2 EXAMINATION:

A. Before commencement of work, carefully examine all surfaces to be painted and notify the Architect in writing of any conditions detrimental to the performance of this work. Do not proceed until unsatisfactory or deteriorated conditions have been inspected, corrected and are acceptable to the Architect and the applicator. Commencement of work will be construed as the applicator's acceptance of all surfaces. Commencement of the work prior to the Architect's inspection and acceptance is done at the applicator's risk.

B. Maximum Moisture Content of Substrates: Do not begin application of coatings unless moisture content of exposed surface is below the maximum value recommended in writing by paint manufacturer and not greater than the following maximum values when measured with an electronic moisture meter appropriate to the substrate material:

3.3 INSPECTION:

A. Prior to all work of this Section, carefully inspect the installed work of all other Trades and verify that all such work is complete to the point where this installation may properly commence.

B. Verify that paint finishes may be applied in strict accordance with all pertinent codes and regulations and the requirements of these Specifications.

3.4 DISCREPENCIES

A. In the event of discrepancy, immediately notify the Architect.

B. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved. Commencement of work shall be construed as acceptance of the surfaces and, therefore, the Contractor shall be fully responsible for satisfactory work as required herein.

3.5 SURFACE PREPARATION

A. General: For application of approved removal products, use only such equipment as is recommended for application of the paint removal product by the manufacturer, and as approved by the Architect.
   1. General: Use only the gentlest, appropriate method necessary to clean surfaces in preparation for painting. Clean all surfaces, corners, contours, and interstices.

B. Compatibility: Prior to actual use of the application equipment, use all means necessary to verify that the proposed equipment is actually compatible with the material to be applied and that the integrity of the finish will not be jeopardized by use of the proposed application equipment. Contractor to coordinate with manufacturer's representatives on appropriate tools and equipment.

C. Prior to all surface preparation and paint operations, completely mask, remove, or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and similar items in contact with painted surfaces but not scheduled to receive paint.

D. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease and incompatible paint and encapsulates.

E. Do not proceed with treatment until proper protection has been installed for adjacent materials.

F. Detergent Cleaning: Wash surfaces by hand using clean rags, sponges, and bristle brushes. Scrub surface with detergent solution and bristle brush until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet. Rinse with water applied by clean rags or sponges.

G. Solvent Cleaning: Use solvent cleaning to remove oil, grease, smoke, tar, and asphalt from painted or unpainted surfaces before other preparation work. Wipe surfaces with solvent using clean rags and sponges. If necessary, spot-solvent cleaning may be employed just prior to commencement of paint application, provided enough time is allowed for complete evaporation.

H. Mildew: Clean off existing mildew, algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent solution. Scrub mildewed areas with mildewcide. Rinse with water applied by clean rags or sponges.

I. Contractor shall reclaim and dispose of all spent media used in conjunction with this project in accordance with applicable laws.

3.6 PAINT REMOVAL

A. Schedule all cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

B. Adequate illumination shall be provided in all areas where painting and staining operations are in progress.

3.7 MATERIAL PREPARATION OF PAINT

A. Mix and prepare materials in accordance with manufacturer’s directions or those specified herein, whichever is more stringent.

B. Stir materials before application to produce a mixture of uniform density and stir as required during application of the materials. Do not stir into the material any foreign materials, residue or surface film. Remove any such deleterious material and strain coating materials before using if necessary.

C. Add minimum amount of solvents or thinners to coating materials as necessary to achieve proper consistency for method of application.

3.8 PAINT APPLICATION

A. Prepare surfaces to be painted according to the Surface-Preparation Schedule and with manufacturer's written instructions for each substrate condition.

B. Apply a transition coat over incompatible existing coatings.

C. General Finish Application for Paint
   1. All materials shall be applied under adequate illumination, evenly spread, and smoothly flowed on with the proper type and size of brushes, roller covers, and bucket grids, to avoid run, sags, holidays, brush marks, air bubbles, and excessive roller stipple.
   2. The number of coats and film thickness shall be the same regardless of the method of application. Do not apply succeeding coats until previous coat has dried or cured as recommended by paint manufacturer. Give special attention to ensure that surfaces, including edges, corners, and crevices receive a dry film thickness equivalent to that of flat surfaces.
   3. Apply each coat at not less than recommended spreading rate to provide the dry film millimeter thickness specified by the manufacturer for each paint coating.
   4. Coverage and hiding shall be complete. When color, stain, mark of any kind, dirt or undercoats show through the final schedule coat of paint to the surface, it shall be covered by additional coats until the paint film is of uniform finish, color, appearance and coverage at no additional cost to the Architect.
   5. Back prime any new material before installation unless specified to receive a transparent finish.
   6. Touch-up painting as required to provide smooth, even finish prior to final acceptance of work.

D. Metal

1. Clean and prepare surface as outlined by manufacture's recommendations.
2. Prior to applying paint, ensure surface is dry.
3. Follow manufacturer's recommendations for application of primer and finish coats.

E. All materials must be inspected by Architect prior to application of finish coat.

3.9 CLEAN UP

A. General

1. Provide daily cleanup
2. During progress of the Work, do not allow the accumulation of empty containers or other excess items except in area specifically set aside for that purpose. Do not store paint materials uncovered.
3. Prevent accidental spilling or splashing of paint materials, and in the event of such spill, immediately remove all spilled material and the waste or other equipment used to clean up the spill, and wash the surfaces to their original undamaged condition, all at no additional cost to the Architect.

B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

C. Upon completion of the painting or finishing, remove excess paint materials, tools and equipment, drop cloths and other protective materials, and debris from the site.

D. Prior to final acceptance: Upon completion of this portion of the Work, visually inspect the surfaces. Clean paint spots or spatters from surfaces not scheduled to receive paint, such as landings, adjacent masonry, and fixtures, leaving surfaces in a satisfactory condition.

END OF SECTION 099000

SECTION 099133 – SILICATE MINERAL EXTERIOR PAINT/COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 013959 “Historic Treatment Procedures”

C. Codes and standards set forth by:
   1. All work shall be performed in accordance with the “Secretary of the Interior’s Standards for Rehabilitation, “U.S. Department of the Interior, National Park Service, 1995.”
   2. Preservation Brief #1, "Assessing Cleaning and Water Repellent Cleaning for Historic Masonry Buildings" as published by the U. S. National Park Service.
   3. Preservation Brief #6, "Dangers of Abrasive Cleaning to Historic Buildings" as published by the U. S. National Park Service.
   4. ASTM D16-03 “Standard Terminology for Paint, Related Coatings, Materials, and Applications”
   5. ASTM E 96, "Standard Test Methods for Water Vapor Transmission of Materials."
   6. ASTM E 514, "Standard Test Method for Water Penetration and Leakage Through Masonry."

1.2 SUMMARY

A. This project involves the preservation of an historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.

B. Section includes surface preparation and the application of paint systems on the following exterior substrates:
   1. Stucco (limited to stucco damaged and repaired during window restoration).

C. Related Products
   1. BEECK Fixative

1.3 DEFINITIONS

A. Mineral Silicate paint/coating, base coat: The first applied coat of the mineral silicate paint/coating.

B. Mineral Silicate paint/coating, top coat: The second applied coat of the mineral silicate paint/coating.

1.4 SYSTEM DESCRIPTION

A. A materials-compatible highly vapor permeable decorative coating system offering strong weathering protection for exterior exposure.
   1. Mineral Silicate Paint/Coating: An incombustible two coat system comprising of a “Coarse” texture filled base coat and a “Fine” smooth top coat.
      a. Mineral Silicate paint/coating penetrates the surface and in a chemical reaction combines with the substrate through chemical and mechanical bonds forming a hard, amorphous microporous layer with extremely high vapor permeability.
      b. Unaffected by acids or alkalinity, UV exposure, or air-borne pollutants.
      c. Unique alkaline mineral layer structure maintains moisture balance through vapor diffusion to keep wall assemblies breathable and dry, thus resisting mold and biological growth.
      d. Will not reduce vapor permeability of substrate.
      e. Coarse, filling first coat optically blends together the primer coat application and fills existing hairline cracks, crazing and other irregularities.

1.5 SCOPE

A. This Section includes all labor, materials, equipment, and services required to furnish and apply all of the painting materials indicated on the Drawings and as specified herein.

B. Contractor shall leave owner with one can of each product used appropriately marked with details of location on buildings. Provide list of color names, numbers and formulas.

1.6 SUBMITTALS

A. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Provide published documentation describing materials, characteristics, and limitations.

B. Samples: Submit samples for verification purposes, fabrication techniques and workmanship. Resubmit until required sheen, color, and texture is achieved

C. Manufacturer's Instructions: Submit manufacturer’s instructions including technical data sheets, material safety data sheets, mixing instructions, application requirements, special procedures, and conditions requiring special attention.

D. Qualifications: Submit documentation of painters past project experience that meets minimum the work experience outlined in the specification (Applicator Qualifications).

E. Closeout Documentation: Contractor shall leave one can of each product used appropriately marked with details of location on the building. Provide list of color names, numbers, and formulas.

1.7 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer Qualifications: Provide evidence that Manufacturer is a firm engaged in the manufacture of mineral silicate paint/coatings of types required, and whose products have been in satisfactory use in similar service for a minimum of fifteen years.

2. Applicator Qualifications:
    a. Provide evidence Applicator is a firm having a minimum of five (5) years of successful application experience with projects similar in type and scope to that required for this Project and having passed a product certification training course provided by the manufacturer prior to the execution of this unit of work. Qualified painting specialist must have a minimum of two projects that include the installation of mineral silicate paint/coatings systems.

B. Mockups: Prepare mockups for each type of coating system and substrate indicated and each color and finish required to demonstrate aesthetic effects and to set quality standards for materials and execution. Duplicate appearance of approved Sample submittals.
1. Prior to application of the work, fabricate and erect mock ups for each type of finish and application to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution.
2. Build mock ups to comply with the following requirements using materials indicated for final unit of work.
    a. Locate mock ups as directed by the Architect.
    b. Demonstrate the proposed range of aesthetic effects and workmanship to be expected in the completed work.
    c. Obtain the Architect's acceptance of mock ups before start of final unit of work.
    d. Determine Application Ratio:
        1) Locate area(s) to receive the mineral silicate paint/coating mock up samples. Prepare surfaces as directed in Sections 3.1 EXAMINATION, 3.3 PREPARATION, and 3.4 APPLICATION.
        2) Demonstrate the proposed range of aesthetic effects and workmanship to be expected in the completed work. .
        3) Prepare sample material: Provide minimum three transparent examples of mineral silicate paint/coatings and thinner mixed in a ratio of one to the other. Maintain a record of prepared paint/coating color and thinner ratio mixtures.
        4) Stir well before starting application and keep well-stirred thereafter for color consistency. Apply sample material as directed in Section 2.4 FINISHES. Apply the prepared samples in two coats allowing minimum 12 hours between coats. Results may be evaluated for approval after final coat has cured minimum 16 hours.
        5) Approved Application: Maintain a record of approved mock up's product mixing and application steps to incorporate into final unit of work to ensure color consistency and textural aesthetics

C. PROJECT CONDITIONS
1. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.
2. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

1.8 ENVIRONMENTAL CONDITIONS

A. The coating manufacturer's requirements for ambient temperature, humidity, and ventilation during painting operations, and temperature of surfaces to receive a coating shall be strictly followed.

B. Do not apply in freezing conditions, when rain is expected, or in high winds.

C. Comply with the manufacturer's recommendations as to environmental conditions under which the coating systems may be applied.

D. Do not apply paint in areas where dust is being generated.

E. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project site in supplier’s or manufacturer’s original wrappings and containers, labeled with manufacturer’s name, material and product brand name, and lot number, if any.

B. Store materials according to manufactures product data sheet and in their original undamaged packages and containers inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

C. Replacements: In the event of damage to the products, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

1. Order replacement materials at the earliest possible date, to avoid delaying completion of the Work.

1.10 WARRANTY

A. Provide manufacturer’s written product warranty.
1. Warranty period from date of Substantial Completion is 15 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design:
1. Items specified are to establish a standard of quality for design, function, materials, compatibility, performance, warranty, and appearance.
2. Equivalent products by listed manufacturers are acceptable.
3. The Architect is the sole judge of the basis of what is equivalent.

B. Listed Manufacturers
a. BEECK Mineral Paints, 8161 Regent Parkway #101, Fort Mill, South Carolina 29715. Telephone: 704-940-3603. Email: info@BeeckMineralPaints.com

2.2 MATERIALS

A. Pretreatment: BEECK Fixative (*Applicable to areas of delamination and disaggregation*)
1. Pure mineral potassium water glass
2. Organic content 0 % (VOB/C DIN 18363 2.4.1.)
3. Water thinnable
4. Free from solvents, biocides and preservatives

B. Mineral Silicate Paint/Coating, Base Coat: Provide mineral silicate based opaque paint/coating meeting or conforming to:
   1. DIN 4102-A2 & EN 13501-1, non-flammable standard – will not burn.
   2. ASTM E 96 Vapor Permeability – 75 to 85 perms.
   3. ASTM G 154 Accelerated Weathering – no fading, cracking, peeling.
   4. ASTM E 514 62-MPH Wind-Driven Rain Test – no water penetration.
   5. ASTM D 6886-12 Standard Test Method for Individual Volatile Organic Compounds (VOCs) – Less than 10 grams per liter VOC (Volatile Organic Content) white or fully tinted.
   6. Having mineral fillers in grains from 0 to 0.5 mm.
   7. Tinted equal to the top finish coating.
   8. Basis of Design: “BEECK Renosil Coarse”, BEECK Mineral Paints.
   9. Color: C-124-2 (BEECK Classic LV 62)

C. Mineral Silicate Paint/Coating, Top Coat: Provide mineral silicate based opaque paint/coating meeting or conforming to:
   1. DIN 4102-A2 & EN 13501-1, non-flammable standard – will not burn.
   2. ASTM E 96 Vapor Permeability – 75 to 85 perms.
   3. ASTM G 154 Accelerated Weathering – no fading, cracking, peeling.
   4. ASTM E 514 62-MPH Wind-Driven Rain Test – no water penetration.
   5. ASTM D 6886-12 Standard Test Method for Individual Volatile Organic Compounds (VOCs) – Less than 10 grams per liter VOC (Volatile Organic Content) white or fully tinted.
   6. Tinted to the desired finish color. C-124-2 (BEECK Classic LV 62)
   7. Basis of Design: “BEECK Renosil Fine”, BEECK Mineral Paints

2.3 EQUIPMENT

A. Tools:
   1. Mineral Silicate paint/coating, base and top coats: Apply by natural bristle façade brush.
      a. Mineral Façade Brush produced by BEECK Mineral Paints
      b. Or approved equal

2.4 FINISHES

A. Mineral Silicate paint/coating, base and top coats:
   1. Apply in full coverage evenly distributed coats to a smooth mineral matte finish without lap lines, voids, “holidays”, or drips. Compare manufacturer-verified mock up consumption data with application consumption data to ensure enough product is applied.
   2. Maintain a wet edge to prevent sight lines, color differences and textural differences.
   3. Apply enough product to prevent shading and textural differences that contribute to striping, especially with the base coat. Applying inadequate or inconsistent amount of product can produce unexpected results.
   4. When working from scaffolding, work as a team moving across façade maximum eight (8) vertical feet per applicator to ensure complete coverage and wet edge left to right and top to bottom of each section.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Confirm by examination the areas and conditions under which the work is to be applied for compliance with manufacturer's instructions. Do not proceed with the work until unsatisfactory conditions have been corrected.
   1. Verify substrate is secure, sound, dry, and absorbent, and free of dirt, grease, salts, oil-based paints, release agents, curing agents, and other bond breakers.
   2. Verify substrate has no pretreatments or priming materials applied unless such conditions are approved by manufacturer.
   3. Verify surfaces or materials to be coated are fully cured to manufacturer recommendations.
   4. Confirm coating surfaces are less than 40 percent relative humidity as measured by a masonry moisture meter prior to application of mineral silicate paint/coatings.
   5. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Applicator.

3.2 DISCREPENCIES

A. In the event of discrepancy, immediately notify the Architect.

B. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved. Commencement of work shall be construed as acceptance of the surfaces and, therefore, the Contractor shall be fully responsible for satisfactory work as required herein.

3.3 PREPARATION

A. Protection:
   1. Prior to all surface preparation and paint operations, completely mask, remove, or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and similar items in contact with painted surfaces but not scheduled to receive paint.
   2. Lay ground cloths and take measures as necessary to protect surfaces subject to contact by products specified by this Section.
   3. Mineral Silicate paint/coatings or thinner may etch or bond to glass, metal, and concrete.

B. Efflorescence on any area that is scheduled to be painted shall be removed.

C. Surface Preparation
   1. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease and incompatible paint and encapsulates.
   2. Clean the surface removing all biological growth.
   3. Remove as much of the old limewash as possible by washing and scrubbing the surface using a low-pressure pressure washer and plastic bristle scrub brush. Any tightly adhering limewash that remains can be bound with the pretreatment. After the surface has dried, test the remaining limewash by rubbing your hand on the surface. If the surface does not chalk onto your hand, it is ready for pretreatment. If the surface chalks onto your hand, repeat the cleaning and scrubbing step

3.4 APPLICATION

A. Conform to reviewed product data, manufacturer's written instructions, and provisions of the Contract Documents.

B. Plan the work properly.
   1. Maintain temperature during and after application. Substrate and ambient air temperature must be between 40 °F (4 °C) and 86 °F (30 °C).
   2. Work ahead of the sun on shaded façades to avoid working on hot substrates.
   3. Work to logical stopping points (corners, seams, architectural features, etc.).
   4. Apply mineral silicate paint/coatings as directed by 2.4 FINISHES.
   5. Protect from wind and rain prior to, during, and for a minimum 24 hours after application.
   6. Obtain manufacturer’s written instructions for application outside of the above parameters.

C. Pretreatment:
   1. BEECK Fixative
      a. Substrate Requirements
         1) The substrate must be mineral, non-water repellent, clean, dry, firm and stable, free from efflorescent and separating substances such as oils, greases and other contaminants.
         2) Test new stucco or plaster for drying and strength.
         3) Allow proper drying and curing of newly installed surfaces.
         4) Use an etching fluid to remove sinter skin on solid new mortar, plaster/stucco/render. Do not etch thin coat renders and composite materials.
      b. For the pretreatment use an application ratio of 1:2 for highly absorbing surfaces.
         1) Thin 1 part Fixative with 2 parts water.
         2) Apply in a flow coat repeatedly (2-3 times wet-on-wet) until the surface is completely saturated.
         3) Approx. 20 minutes after final application, remove any excess or standing material from the surface or spread it to more absorbent areas.
         4) Surface should dry completely before starting the base coat application of paint.
            a) Drying time: at least 12 hours per coat

D. Mineral Silicate paint/coatings:
   1. Base coat:
      a. Thin mineral silicate coarse paint/coating with maximum 10 percent clean water (1 gallon with 12 oz.). Stir well by hand or 600-800 RPM mixing equipment. Care should be taken not to introduce air into the product.
      b. Stir well with mixing equipment to ensure color is uniform throughout the material. Keep mixture continuously stirred during application.
      c. Apply base coat of prepared Mineral Silicate paint/coatings.
      d. Allow minimum 12 hours drying time.
   2. Top coat:
      a. Do not thin mineral silicate fine paint/coatings. Stir well by hand or 600-800 RPM mixing equipment. Care should be taken not to introduce air into the product.
      b. Stir well with mixing equipment to ensure color is uniform throughout the material. Keep mixture continuously stirred during application.
      c. Apply top coat of prepared Mineral Silicate paint/coatings.
   3. Touch up:
      a. Some colors touch up well, some do not. Always perform a test and allow the touch up to cure minimum 12 hours before evaluation. Colors become lighter as they dry.
      b. For colors that do not touch up well, expect corner to corner recoating for acceptable results.

c. When possible, use the same tools and techniques from the application for best results.
d. Articulate the application confining the touch up to the borders of the repair.

3.5 CLEAN UP

A. General

1. Provide daily cleanup.
2. During progress of the Work, do not allow the accumulation of empty containers or other excess items except in area specifically set aside for that purpose. Do not store paint materials uncovered.

B. Prevent accidental spilling or splashing of paint materials, and in the event of such spill, immediately remove all spilled material and the waste or other equipment used to clean up the spill, and wash the surfaces to their original undamaged condition, all at no additional cost to the Owner. Clean tools, spills, and accidental drips immediately with plenty of water.

C. Upon completion of the painting or finishing, remove excess paint materials, tools and equipment, drop cloths and other protective materials, and debris from the site.

D. Prior to final acceptance: Upon completion of this portion of the Work, visually inspect the surfaces. Clean paint spots or spatters from surfaces not scheduled to receive paint, such as landings, adjacent masonry, and fixtures, leaving surfaces in a satisfactory condition. Touch up and restore damaged or defaced painted surfaces.

E. Leave applications clean and premises free from residue and debris from work of this Section.

END OF SECTION 099133

Beaufort Arsenal Window Assessment Beaufort, SC

Prepared for:
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Date: 11.29.2017

ATTENTION:

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Introduction

The following report identifies the findings regarding the exterior window assessment of the Beaufort Arsenal located at 713 Craven Street in Beaufort, SC. The findings described within this summary encompass visual and tactile observations of all windows and select interior locations accomplished during the site inspection performed by Meadors, Inc. in November 2017. Upper portions of the building were accessed from a 24-ft ladder. The assessment and the findings within this report are organized by building elevation, beginning with the south elevation and traveling counterclockwise around the entire structure.

19th century historic photographs indicate that the large second-floor openings originally contained 9/9 double hung sash windows. In 1934, the building was expanded with the addition of two one-story wings on the east and west facades. A majority of windows throughout the building appear to have been replaced at this time with 6/6 double hung windows and new transoms on the second floor. However, several original transoms appear to remain on select windows and have been noted where observed. In 2001, the building was extensively renovated including the installation of a new HVAC system and upgraded Museum exhibits.

Window
Conditions Glossary

Wood Decay

Areas on the woodwork where the members have significantly deteriorated. Often caused by external weathering or excessive moisture intrusion.

Weathered/Damaged Wooden Elements

Areas on the woodwork where the members are sound but appear damaged or weathered.

Separation

Areas of the woodwork where individual boards exhibit displacement and visible gaps can be seen with the naked eye.

General
Conditions Glossary

Non-Displaced Cracking

Individual fissure, clearly visible by the naked eye, resulting from separation of one part from another.

Micro-flora

Zones of biological growth including algae, fungi, and lichens visible as a black, greenish or brown discoloration.

Category 1 Windows

Typical conditions

Figure 1: Category 1 windows typically have extensive paint loss.

Figure 2: Glazing putty failure is prominent feature on all the inspected windows.

Figure 3: Detail of casing of transom windows that is proud of the lower casing. This condition is typical on the second-floor windows.

Category 2 Windows
Typical conditions

Figure 4: Category 2 windows typically have evidence of deterioration or excessive weathering on the casing and the sills.

Figure 5: Detail of typical deterioration.

Figure 6: Category 2 windows commonly contain dutchman repairs that are actively separating.

Category 3 Windows

Typical conditions

Figure 7: Category 3 windows typically have evidence of deterioration within the window sashes.

Figure 8: Common failures include deterioration at the meeting rail and the bottom rail of the lower sashes.

Figure 9: Detail of deterioration on a fixed casement window.

Photo Assessment

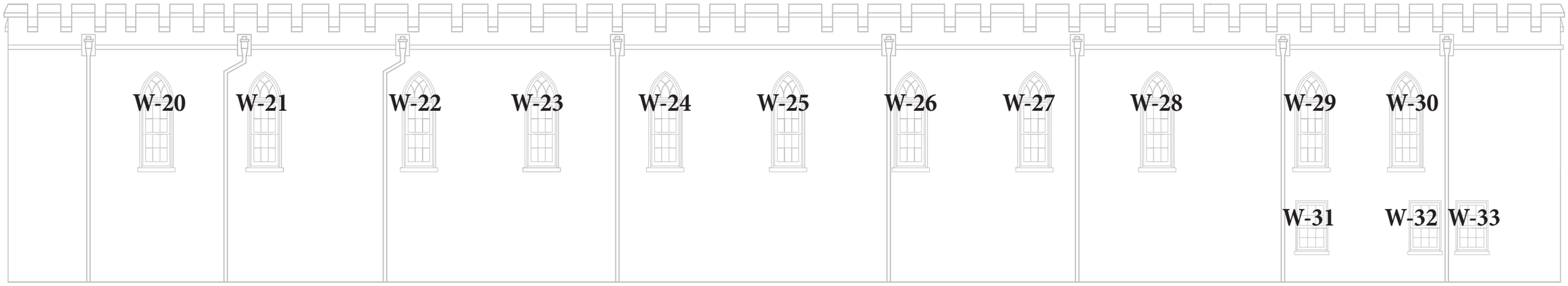
Reference Drawings: Window Diagram

South Elevation

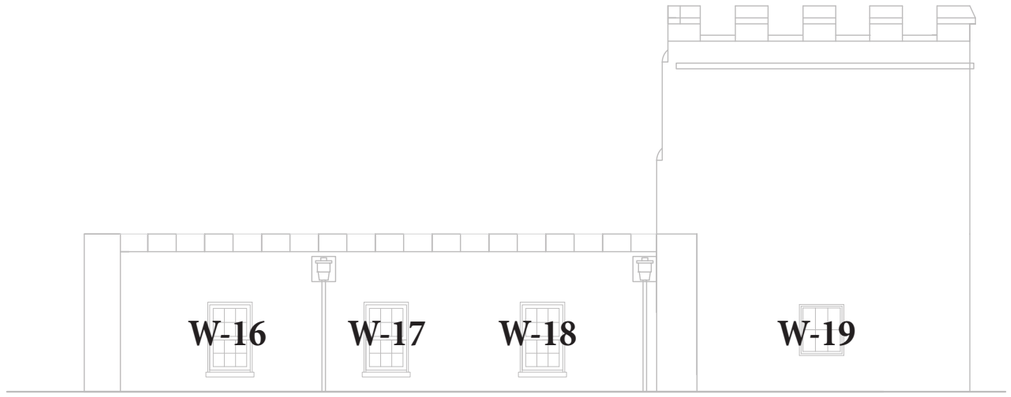
East Elevation
Interior Courtyard

West Elevation
Interior Courtyard

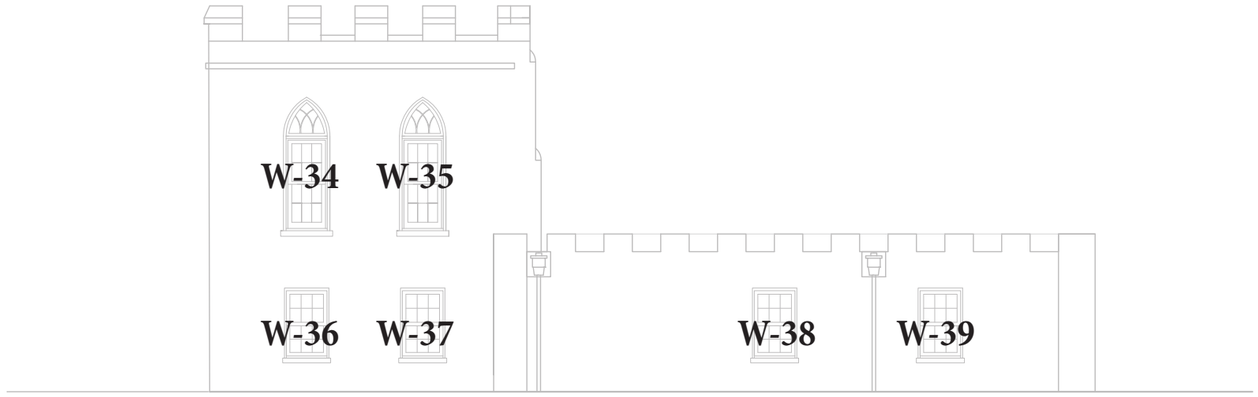
Reference Drawings: Window Diagram



North Elevation



East Elevation



West Elevation

Beaufort Arsenal Window #01: Summary of Findings

Category 3

Notes on Condition:

The window sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

The upper sash is deteriorated at the intersection of the right stile and the meeting rail. The joints of the upper sash are beginning to separate.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. Ferrous fasteners are present within the casing. The casing of the transom appears to have been previously repaired and does not align with the casing at the bottom of the window.

The window has been permanently opened to accommodate the installation of a window air conditioning unit.

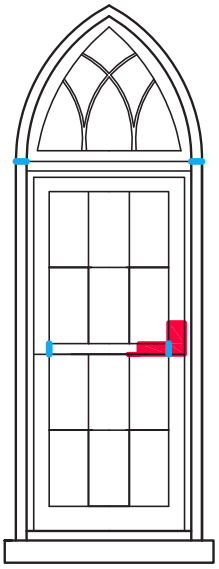


Figure 10: Overview of window #W-01. This is an historic double-hung sash window.

Figure 11: The casing of the transom window does not align with the lower casing.

Figure 12: Detail of lower sash.

Figure 13: The upper sash is deteriorated at the intersection of the right stile and bottom rail.

Beaufort Arsenal Window #02: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes appear to have been replaced during the 1934 restoration. The transom appears to be older and is possibly original. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The upper sash is deteriorated at the intersection of the left stile and the meeting rail. The bottom rail of the lower sash is completely deteriorated. Several areas of the casing are heavily weathered. Over painting is present on the transom window glass.

The casing of the transom appears to have been previously repaired and does not align with the casing at the bottom of the window.

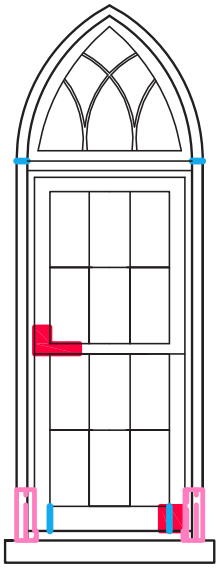


Figure 14: Overview of window #W-02. This is an historic double-hung sash window.

Figure 15: The lower sash is deteriorated along the bottom rail.

Figure 16: The upper sash is deteriorated at intersection of the left stile and bottom rail.

Figure 17: Detail of interior conditions.

Beaufort Arsenal Window #03: Summary of Findings

Category 2

Notes on Condition:

The double hung sashes appear to have been replaced during the 1934 restoration. The transom appears to be older and is possibly original. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The joints within the window are beginning to separate throughout the sashes. The casing on the lower left side has been repaired with a composite material. The casing beneath this repair may be deteriorated. Ferrous fasteners are present within the casing and are beginning to corrode.

The casing of the transom is broken along a joint on either side of the window.

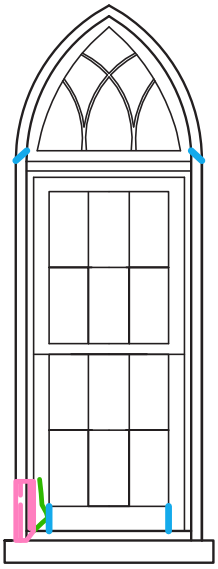


Figure 18: Overview of window #W-03. This is an historic double-hung sash window.

Figure 19: The transom appears to be historic and is in fair condition.

Figure 20: The left side of the window has been repaired with a composite material. The casing may be damaged beneath this repair.

Figure 21: Detail of interior conditions.

Beaufort Arsenal Window #04: Summary of Findings

Category 1

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The joints within the window are beginning to separate throughout the window. The casing on the lower right side has been repaired with a dutchman. The dutchman is now releasing from the casing. Ferrous fasteners within the window are corroding and bleeding through the woodwork.

The casing of the transom has been repaired and does not align with the casing below. The sill is heavily weathered.

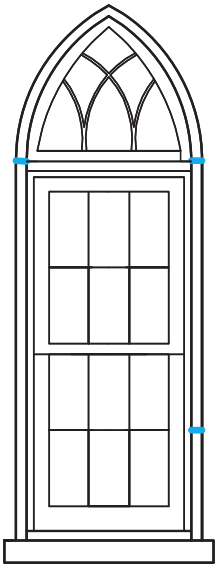


Figure 22: Overview of window #W-04. This is an historic double-hung sash window.

Figure 23: The casing on the lower right hand side has been repaired with a dutchman. The dutchman is now releasing from the casing.

Figure 24: There is extensive paint and glazing failure throughout the window.

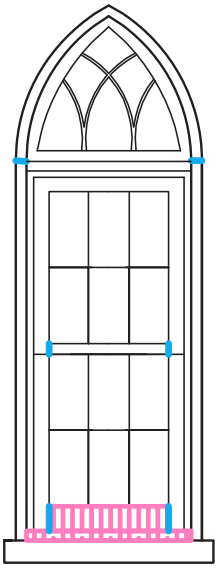
Figure 25: Detail of interior conditions.

Beaufort Arsenal Window #05: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes appear to have been replaced during the 1934 restoration. The transom appears to be older and may be original to the construction of the building. Glazing putty and paint failure are present throughout the opening.



Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The joints within the window are beginning to separate throughout the window. The bottom rail of the lower sash is heavily weathered. Minor damage is present on the sill and meeting rail. Ferrous fasteners present throughout the window are actively corroding and bleeding through the paint.

The casing of the transom has been repaired and is slightly misaligned from the lower casing. A small gap is present between the exterior casing and the stucco on the right hand side of the opening. The underlying masonry is visible at this location.

Figure 26: Overview of window #W-05. This is an historic double-hung sash window.

Figure 27: There is a small gap between the casing and the exterior stucco.

Figure 28: The bottom rail of the lower sash is heavily weathered and is separating at the joints.

Figure 29: Detail of interior conditions.

Beaufort Arsenal Window #06: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes appear to have been replaced during the 1934 restoration. The transom appears to be older and may be original to the construction of the building. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The joints within the window are beginning to separate throughout the window. The bottom rail of the lower sash is deteriorated. The right stile of the upper sash is deteriorated and cracking where it intersects the meeting rail. A muntin is broken on the upper sash. Ferrous fasteners present throughout the window are actively corroding and bleeding through the paint.

The casing of the transom has been repaired and is misaligned from the lower casing.

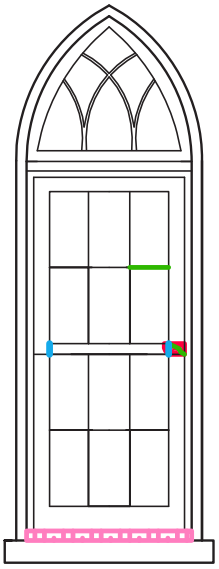


Figure 30: Overview of window #W-06. This is an historic double-hung sash window.

Figure 31: The right stile of the upper sash is deteriorated. A broken muntin is also visible within the upper sash.

Figure 32: The bottom rail of the lower sash is deteriorated and requires replacement.

Figure 33: Detail of interior conditions.

Beaufort Arsenal Window #07: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The bottom rail and muntins of the lower sash are completely deteriorated. The window glass is dislodged at this location. This damage is evident on the interior of the window.

The casing of the transom has been repaired and is misaligned from the lower casing.

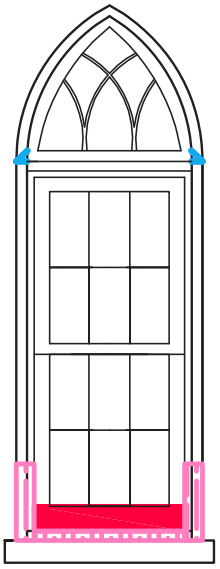


Figure 34: Overview of window #W-07. This is an historic double-hung sash window.

Figure 35: The transom casing is proud of the lower window casing.

Figure 36: The lower sash is completely deteriorated.

Figure 37: The lower sash is completely deteriorated and visible on the interior of the window.

Beaufort Arsenal Window #08: Summary of Findings

Category 2

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The upper sash is split on the right side of the window. The window is heavily weathered and is beginning to separate at the joints.

The casing of the transom has been repaired and is slightly misaligned from the lower casing.

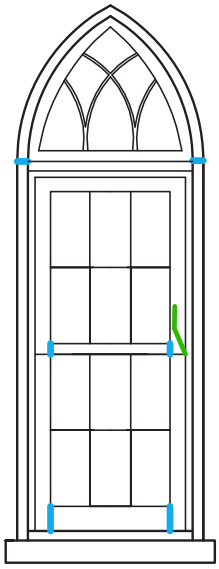


Figure 38: Overview of window #W-08. This is an historic double-hung sash window.

Figure 39: The transom casing is slightly proud of the lower window casing.

Figure 40: The lower sash is weathered but appears sound.

Figure 41: Detail of interior conditions.

Beaufort Arsenal Window #09: Summary of Findings

Category 2

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The casing is soft at the bottom of the window. Dutchman repairs are visible within the casing and are beginning to separate at the joints.

The casing of the transom has been repaired and is slightly misaligned from the lower casing. Cut outs are present within the transom casing. A pane of glass is broken in the transom window.

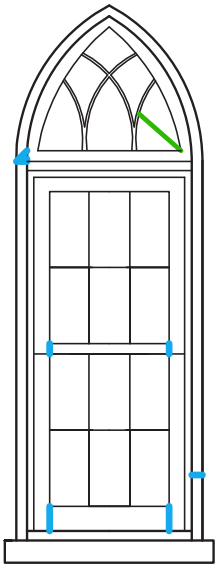


Figure 42: Overview of window #W-09. This is an historic double-hung sash window.

Figure 43: The transom casing is slightly proud of the lower window casing. A pane of glass is broken within the transom.

Figure 44: Several dutchman are present within the casing. The casing is soft at the lower portions of the window.

Figure 45: Detail of interior conditions.

Beaufort Arsenal Window #10: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening. The caulk has failed at the bottom of the masonry sill.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The window is heavily weathered throughout the opening. The casing of the transom is separating at the joints, The transom bar is heavily weathered.

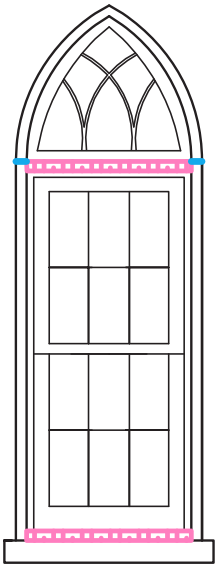


Figure 46: Overview of window #W-10. This is an historic double-hung sash window.

Figure 47: The transom bar is heavily weathered.

Figure 48: The sill is heavily weathered.

Figure 49: Detail of interior conditions.

Beaufort Arsenal Window #11: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The sashes are beginning to separate at the joints.

The casing of the transom has been repaired and is slightly misaligned from the lower casing. The bottom of the lower sash is deteriorated on the left side.

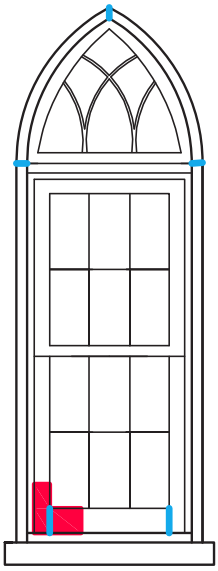


Figure 50: Overview of window #W-11. This is an historic double-hung sash window.

Figure 51: The transom casing is beginning to separate at the joints. The glass is in good condition.

Figure 52: The lower sash is deteriorated on the right hand side.

Figure 53: Detail of interior conditions.

Beaufort Arsenal Window #12: Summary of Findings

Category 1

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The window elements appear to be sound and in fair condition. There is slight separation between the joints. The base of the jamb and casing where they intersect the sill is not caulked and can allow water to enter the interior. The masonry opening is cracked within the pointed arch above the window.

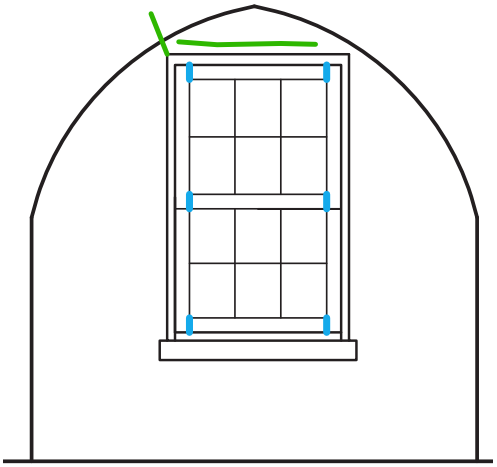


Figure 54: Overview of window #W-12. This is an historic double-hung sash window.

Figure 55: Glazing putty and paint failure are present throughout the window.

Figure 56: The masonry opening is cracked above the head of the window.

Figure 57: Detail of interior conditions. A leak is present within the masonry above this window.

Beaufort Arsenal Window #13: Summary of Findings

Category 1

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The window elements appear to be sound and in fair condition. There is slight separation between the joints. The base of the jamb and casing where they intersect the sill is not caulked and can allow water to enter the interior. The masonry opening is cracked within the pointed arch above the window.

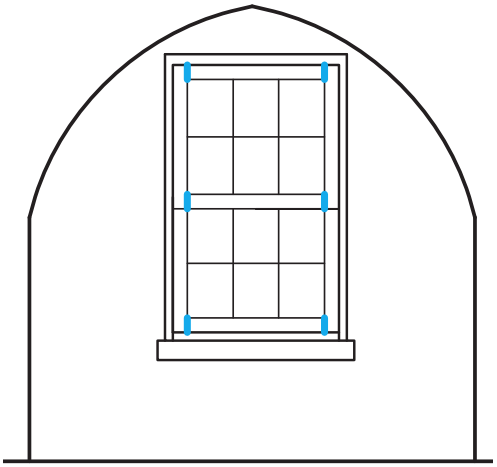


Figure 58: Overview of window #W-13. This is an historic double-hung sash window.

Figure 59: The window is in fair condition.

Figure 60: The bottom of the jamb and casing where it intersects the masonry sill is not caulked.

Figure 61: Detail of interior conditions.

Beaufort Arsenal Window #14: Summary of Findings

Category 2

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The window elements appear to be sound and in fair condition. There is slight separation between the joints and cracking within the woodwork. The bottom rail of the lower sash is heavily weathered. The base of the jamb and casing where they intersect the sill is not caulked and can allow water to enter the interior.

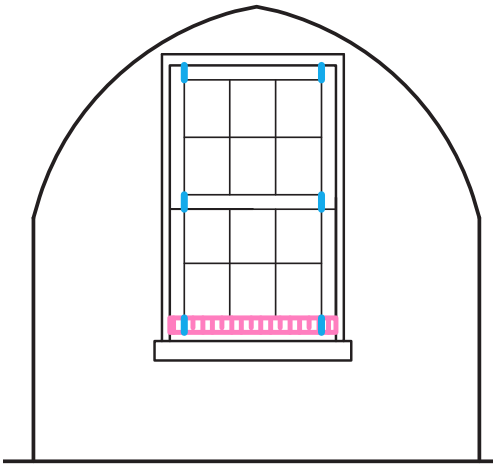


Figure 62: Overview of window #W-14. This is an historic double-hung sash window.

Figure 63: The bottom rail of the lower sash is heavily weathered.

Figure 64: Glazing putty and paint failure is present throughout the window.

Figure 65: Detail of interior conditions.

Beaufort Arsenal Window #15: Summary of Findings

Category 2

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Metal flashing is present below the sill and is not caulked. A gap is present between the window head and the steel lintel at the top of the masonry opening. Ferrous fasteners are present within the casing. The window elements appear to be sound and in fair condition. There is slight separation between the joints and the bottom rail is weathered. The base of the jamb and casing where they intersect the sill is not caulked and can allow water to enter the interior. The masonry opening is cracked within the pointed arch above the window. The stucco has failed on the upper left side of the window.

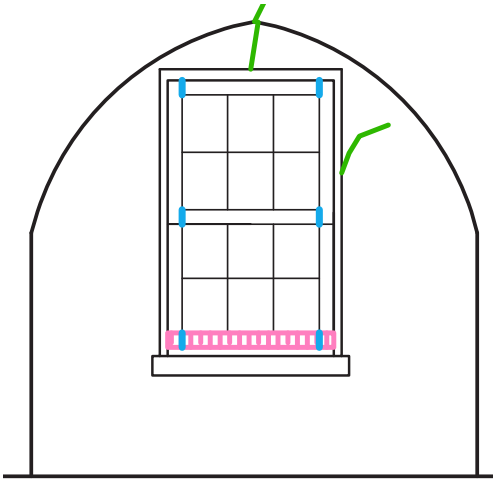


Figure 66: Overview of window #W-15. This is an historic double-hung sash window.

Figure 67: A small gap is present between the steel lintel and the wood casing at the head of the window.

Figure 68: The bottom rail of the lower sash is weathered but sound.

Figure 69: Detail of interior conditions.

Beaufort Arsenal Window #16: Summary of Findings

Category 1

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

The base of the jamb and casing where they intersect the sill is not caulked and can allow water to enter the interior. Biogrowth is present on all wooden and masonry elements throughout this opening. The base of the jamb and casing where they intersect the sill is not caulked and can allow water to enter the interior.

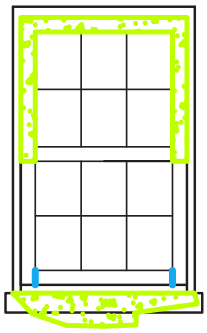


Figure 70: Overview of window #W-16. This is an historic double-hung sash window.

Figure 71: Biogrowth is present throughout the window.

Figure 72: The woodwork is in fair condition. Biogrowth is present on the wooden elements.

Figure 73: Detail of interior conditions.

Beaufort Arsenal Window #17: Summary of Findings

Category 1

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening. The glazing putty appears to have been applied shallowly at several locations.

The window elements appear to be sound and in fair condition. There is slight separation between the joints and cracking within the woodwork. The gap between the metal pan flashing and the wooden sill is uncaulked. The base of the jamb and casing where they intersect the sill is not caulked and can allow water to enter the interior.

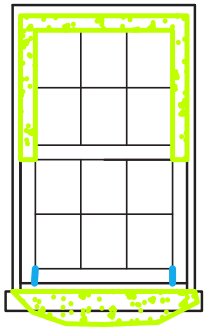


Figure 74: Overview of window #W-17. This is an historic double-hung sash window.

Figure 75: The woodwork is in fair condition.

Figure 76: The woodwork is in fair condition.

Figure 77: Detail of interior conditions.

Beaufort Arsenal Window #18: Summary of Findings

Category 2

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The window elements appear to be sound but are heavily weathered. There is slight separation between the joints and cracking within the woodwork. The bottom sash is heavily weathered.

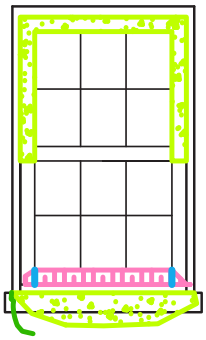


Figure 78: Overview of window #W-18. This is an historic double-hung sash window.

Figure 79: The woodwork is weathered but appears to be sound.

Figure 80: Glazing putty and paint failure is present throughout the window.

Figure 81: Detail of interior conditions.

Beaufort Arsenal Window #19: Summary of Findings

Category 3

Notes on Condition:

The casement window appears to have been installed during the 20th century. Steel bars are in place in front of the window. Glazing putty and paint failure are present throughout the opening. Several muntins are broken.

The bottom rail of the window is heavily deteriorated. A pane of glass is broken above this location.

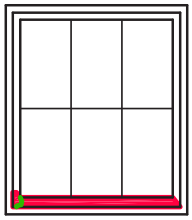


Figure 82: Overview of window #W-19. This is an historic casement window.

Figure 83: The head of the window is in fair condition.

Figure 84: The window is heavily deteriorated at the bottom. The pane of glass is broken at the location.

Figure 85: Detail of interior conditions.

Beaufort Arsenal Window #20: Summary of Findings

Category 1

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Some separation was noted within the joints. The woodwork appears to be in good condition with no noticeable areas of failure.

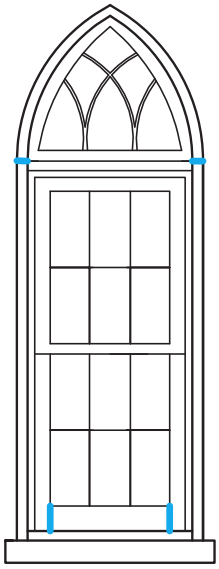


Figure 86: Overview of window #W-20. This is an historic double-hung sash window.

Figure 87: There is extensive glazing and paint failure throughout the window.

Figure 88: The sill is in good condition. There is moderate separation of the joints within the wooden window.

Figure 89: Detail of interior conditions.

Beaufort Arsenal Window #21: Summary of Findings

Category 1

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Some separation was noted within the joints. The woodwork appears to be in good condition with no noticeable areas of failure. Ferrous fasteners present within the window are actively corroding and bleeding through the paint.

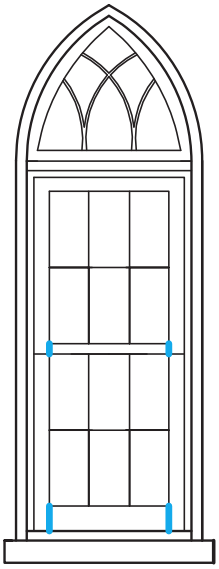


Figure 90: Overview of window #W-21. This is an historic double-hung sash window.

Figure 91: There is extensive glazing and paint failure throughout the window.

Figure 92: Ferrous fasteners within the window are actively corroding.

Figure 93: Detail of interior conditions.

Beaufort Arsenal Window #22: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Some separation was noted within the joints. The upper sash is damaged and cracked along the stiles. Ferrous fasteners present within the window are actively corroding and bleeding through the paint.

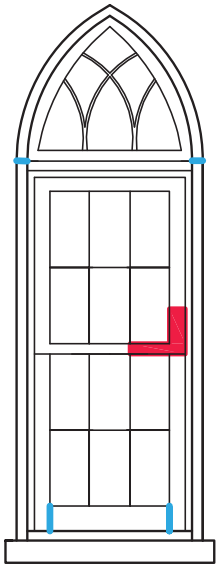


Figure 94: Overview of window #W-22. This is an historic double-hung sash window.

Figure 95: The upper sash is damaged and is cracking along the stiles.

Figure 96: Detail of separation at the joints within the lower sash.

Figure 97: Detail of interior conditions.

Beaufort Arsenal Window #23: Summary of Findings

Category 1

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Some separation was noted within the joints. Dutchman repairs were noted within the transom casing. The sill is in fair condition. Ferrous fasteners present within the window are actively corroding and bleeding through the paint.

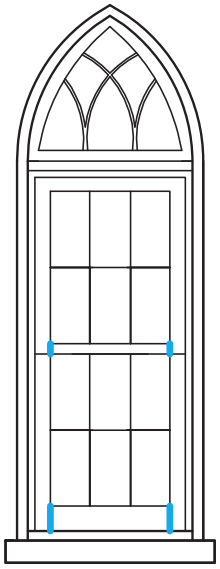


Figure 98: Overview of window #W-23. This is an historic double-hung sash window.

Figure 99: A dutchman repair is present within the transom casing.

Figure 100: Detail of paint and glazing failure.

Figure 101: Detail of interior conditions.

Beaufort Arsenal Window #24: Summary of Findings

Category 2

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Some separation was noted within the joints. Dutchman repairs were noted within the transom casing. The casing is deteriorated on either side of the window below the meeting rail. A large gap is present between the lower sash and the sill. Biogrowth is present on the sill. Ferrous fasteners present within the window are actively corroding and bleeding through the paint.

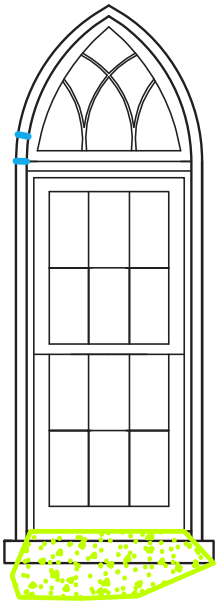


Figure 102: Overview of window #W-24. This is an historic double-hung sash window.

Figure 103: The casing on the left and right hand sides of the window are deteriorated.

Figure 104: A gap is present between the lower sash and the sill. Biogrowth is present on the sill.

Figure 105: Detail of interior conditions.

Beaufort Arsenal Window #25: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Separation was noted within the joints. Dutchman repairs were noted within the transom casing. The transom casing is proud of the lower casing. The bottom rail of the lower sash is deteriorated. A small gap is present between the lower sash and the sill. Biogrowth is evident on the sill. Ferrous fasteners within the window are actively corroding and bleeding through the paint.

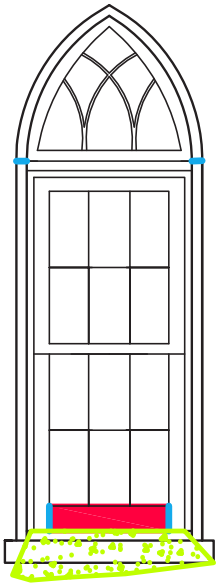


Figure 106: Overview of window #W-25. This is an historic double-hung sash window.

Figure 107: The transom casing is proud of the lower casing.

Figure 108: The bottom rail of the lower sash is deteriorated.

Figure 109: Detail of interior conditions.

Beaufort Arsenal Window #26: Summary of Findings

Category 2

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Separation was noted within the joints. The transom casing is proud of the lower casing. The bottom rail of the lower sash is deteriorated. A large gap is present between the lower sash and the sill. Biogrowth is evident on the sill. Ferrous fasteners within the window are actively corroding and bleeding through the paint. A dutchman repair on the left side of the casing has become displaced but appears sound.

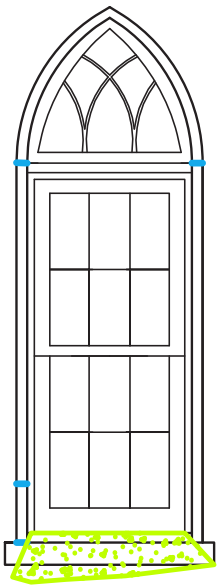


Figure 110: Overview of window #W-26. This is an historic double-hung sash window.

Figure 111: Detail of dutchman repair that is separating at the joints.

Figure 112: A large gap is present between the lower sash and the sill.

Figure 113: Detail of interior conditions.

Beaufort Arsenal Window #27: Summary of Findings

Category 1

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Separation was noted within the joints. The stucco has been repaired around the sill.

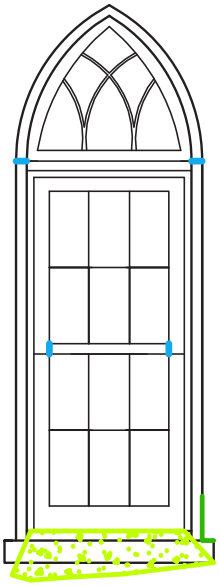


Figure 114: Overview of window #W-27. This is an historic double-hung sash window.

Figure 115: There is moderate separation of the joints within this window.

Figure 116: Detail of stucco repair.

Figure 117: Detail of interior conditions.

Beaufort Arsenal Window #28: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. Separation was noted within the joints. The bottom rail of the lower sash is deteriorated. Ferrous fasteners within the window are actively corroding and bleeding through the paint. A small gap is present between the sill and the lower sash.

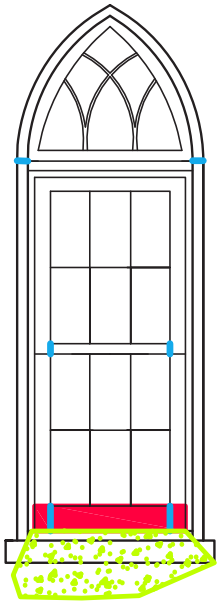


Figure 118: Overview of window #W-28. This is an historic double-hung sash window.

Figure 119: The ferrous fasteners within the window are actively corroding.

Figure 120: Detail of sash deterioration.

Figure 121: Detail of interior conditions.

Beaufort Arsenal Window #29: Summary of Findings

Category 1

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. Separation was noted within the joints. Ferrous fasteners present within the window are actively corroding and bleeding through the paint. Biogrowth is present throughout the sill.

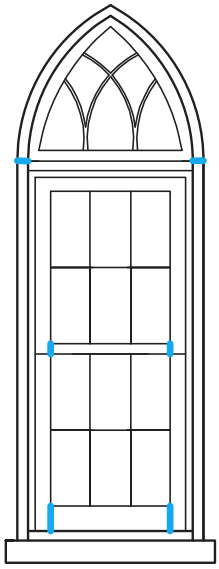


Figure 122: Overview of window #W-29. This is an historic double-hung sash window.

Figure 123: The sill is in good condition. Biogrowth is present throughout.

Figure 124: The casing and frame are in good condition.

Figure 125: Detail of interior conditions.

Beaufort Arsenal Window #30: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 1934 restoration. Glazing putty and paint failure are present throughout the opening.

The upper and lower sash are completely deteriorated. Stucco damage is present around the masonry opening. Holes are present within the casing to accommodate slide bolts used to secure hurricane protection.

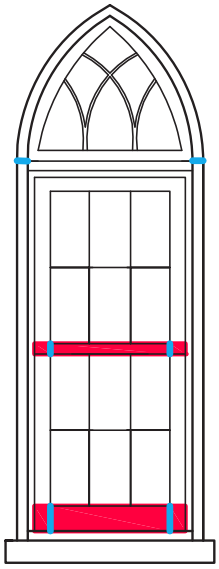


Figure 126: Overview of window #W-30. This is an historic double-hung sash window.

Figure 127: The lower rail of the upper sash is deteriorated.

Figure 128: The bottom rail of the lower sash is deteriorated.

Figure 129: Detail of hole within the casing to secure plywood used for hurricane protection.

Beaufort Arsenal Window #31: Summary of Findings

Category 2

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The lower ends of the casing and jamb are deteriorated. Several inappropriate repairs are present on the casing. The joint between the sill and masonry is not caulked.

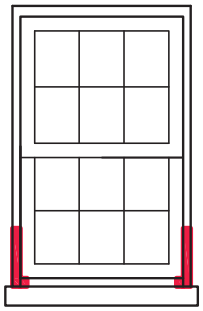


Figure 130: Overview of window #W-31. This is an historic double-hung sash window.

Figure 131: The casing and jamb are deteriorated at this location.

Figure 132: Detail of inappropriate repairs.

Beaufort Arsenal Window #32: Summary of Findings

Category 2

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The lower ends of the casing and jamb are deteriorated. Several inappropriate repairs are present on the casing. The joint between the sill and masonry is not caulked.

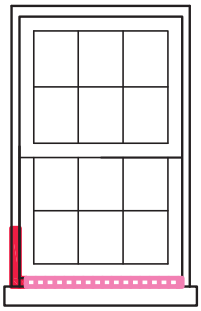


Figure 133: Overview of window #W-32. This is an historic double-hung sash window.

Figure 134: The bottom of the casing on the left hand side is deteriorated.

Figure 135: The sill is heavily weathered and checked but is sound.

Figure 136: Detail of interior conditions.

Beaufort Arsenal Window #33: Summary of Findings

Category 2

Notes on Condition:

The double hung sash window appears to have been installed during the 20th cenutry. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The sill is deteriorated on the left hand side. A pane of glass is broken in the lower sash.

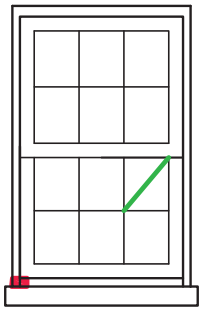


Figure 137: Overview of window #W-33. This is an historic double-hung sash window.

Figure 138: Detail of broken glass.

Figure 139: The sill is deteriorated on the left hand side.

Figure 140: Detail of interior conditions.

Beaufort Arsenal Window #34: Summary of Findings

Category 3

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 20th century. Glazing putty and paint failure are present throughout the opening.

The upper sash is deteriorated and cracked. Stucco damage is present around the masonry opening. A muntin is broken in the upper sash.. Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The caulk surrounding the opening is failing.

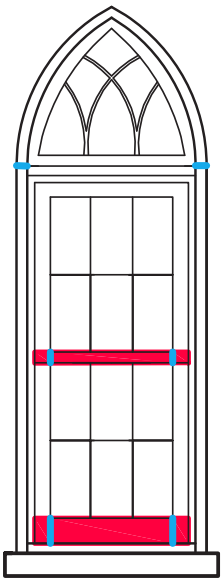


Figure 141: Overview of window #W-34. This is an historic double-hung sash window.

Figure 142: A muntin is broken on the upper sash. Select areas of the sill are deteriorated.

Figure 143: Separation was noted within the lower sash.

Figure 144: The sill is heavily weathered.

Beaufort Arsenal Window #35: Summary of Findings

Category 1

Notes on Condition:

The double hung sashes and transom appear to have been replaced during the 20th century. Glazing putty and paint failure are present throughout the opening.

The upper and lower sash are heavily weathered. The bottom of the upper sash has slight separation. Holes are present within the casing to accommodate slide bolts used to secure hurricane protection. The caulk surrounding the opening is failing.

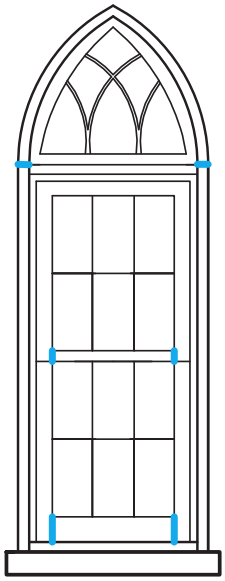


Figure 145: Overview of window #W-35. This is an historic double-hung sash window.

Figure 146: Biogrowth is present on all wooden elements.

Figure 147: Detail of separation with the bottom of the lower sash.

Figure 148: The sill is weathered but sound.

Beaufort Arsenal Window #36: Summary of Findings

Category 1

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The individual window elements appear to be in good condition. A small gap is present between the lower sash and the wooden sill.

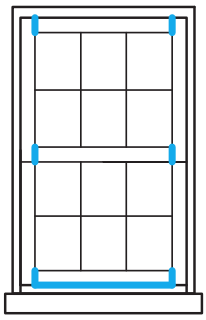


Figure 149: Overview of window #W-36. This is an historic double-hung sash window.

Figure 150: The window is in good condition.

Figure 151: Detail of paint failure.

Figure 152: Detail of interior conditions.

Beaufort Arsenal Window #37: Summary of Findings

Category 1

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The individual window elements appear to be in good condition. A small gap is present between the lower sash and the wooden sill.

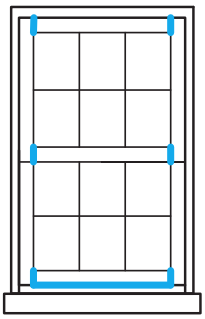


Figure 153: Overview of window #W-36. This is an historic double-hung sash window.

Figure 154: Detail of broken glass.

Figure 155: A small gap is present between the lower sash and the wood will.

Figure 156: Detail of interior conditions.

Beaufort Arsenal Window #38: Summary of Findings

Category 1

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The individual window elements appear to be in good condition. A small gap is present between the lower sash and the wooden sill.

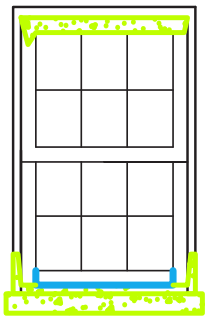


Figure 157: Overview of window #W-36. This is an historic double-hung sash window.

Figure 158: Biogrowth is present throughout the masonry opening.

Figure 159: The wooden elements are in good condition.

Figure 160: Detail of interior conditions and sill. A knot is present within the sill.

Beaufort Arsenal Window #39: Summary of Findings

Category 1

Notes on Condition:

The double hung sash window appears to have been installed during the 20th century. Glazing putty and paint failure are present throughout the opening.

Ferrous fasteners are present within the casing. The individual window elements appear to be in good condition. A small gap is present between the lower sash and the wooden sill. Biogrowth is evident throughout the window and masonry surround.

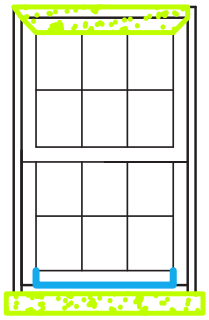


Figure 161: Overview of window #W-36. This is an historic double-hung sash window.

Figure 162: Detail of glazing failure
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Figure 163: Biogrowth is present throughout the window and the masonry opening.

Figure 164: Detail of interior conditions at the stool the location of the and gap between sill and lower sash.