PROJECT MANUAL

CITY OF BEAFORT – ARSENAL WINDOW RESTORATION AND RESTROOM RENOVATION

PROJECT NO. 2019-105

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.

D. Mechanical, Electrical, Plumbing, and Fire Protection Engineers: Live Oak Consulting, Inc., 4214 Fellowship Road, North Charleston, SC 29418.

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, renovation of one (1) existing restroom, and construction of three (3) new restrooms.

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. 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. 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.

B. On-Site Work Hours: The Arsenal is to remain open during construction. Hours of operation for Arsenal & Museum is Monday-Saturday 9AM – 5PM.
   1. Monday - Friday work hours between 7:30 AM – 5 PM.
   2. Weekend Hours: 8:30 AM – 5 PM, owner must approve weekend hours to ensure work does not conflict with event schedule.
   3. Hours for Core Drilling and Other Noisy Activity: After 8:00 AM.

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

D. 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.

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

F. 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 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 and Restroom Renovation 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 (17-0163).

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).
    c. Paint.

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. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of record documents.
b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Submittal of written warranties.
d. Requirements for delivery of material samples, attic stock, and spare parts.
e. Preparation of Contractor's punch list.
f. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
g. Submittal procedures.
h. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

D. Progress Meetings: **Conduct progress meetings weekly. Expect daily site visits from the City's assigned project manager for the duration of the project**

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.
    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.

B. Daily Logs: The selected contractor will keep a log detailing work completed daily.

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 75 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 30 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 75 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. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

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

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

I. 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.

J. 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.

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

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

M. 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.

N. 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.

O. 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 rehabilitation 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 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 PROJECT MEETINGS FOR HISTORIC TREATMENT

A. Preliminary Historic Treatment Preconstruction Conference: Before starting historic treatment work, Contractor will conduct conference at Project site.
   1. Conduct conference on site following Project Preconstruction Meeting.

   2. Attendees: In addition to representatives of the Owner, Architect, Contractor, and Construction Supervisor, and installers who work interfaces with or affects historic treatment shall be represented at the meeting.

   3. General: Review methods and procedures related to historic treatment including, but not limited to, the following:
      a. Review manufacturer's written instructions for precautions and effects of historic treatment procedures on materials, components, and vegetation.
      b. Review and finalize historic treatment construction schedule; verify availability of materials, equipment, and facilities needed to make progress and avoid delays.
      c. Review qualifications of personnel assigned to the work and assign duties.
      d. Review areas where existing construction is to remain and requires protection.

   4. Removal and Dismantling:
      a. Inspect and discuss condition of construction to be removed or dismantled.
      b. Review requirements of other work that relies on substrates exposed by removal and dismantling work.

   5. Reporting: Construction Manager will record conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.

1.6 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.

1.7 SUBMITTALS

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

1.8 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.

1.9 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.

1.10 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.

1.11 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 014000 - QUALITY REQUIREMENTS

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 quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. 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 constructing. Neither the owner not architect assumes responsibility for errors, omissions, or misinterpretations resulting from the use of incomplete sets of bidding and/or construction documents.

1.5 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities. Identify quality-control personnel responsible for the project.

1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.

C. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

D. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.7 REPORTS AND DOCUMENTS

A. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance. See specification sections for specific installer qualifications.

E. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

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

B. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

C. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

D. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

E. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

a. Allow seven days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

1.9 QUALITY CONTROL

A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. Retesting/Reinspection: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspection, for construction that replaced Work that failed to comply with the Contract Documents.

C. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

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 INFORMATIONAL SUBMITTALS

A. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.5 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.

1.6 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 017300 - EXECUTION

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 general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Installation of the Work.
2. Cutting and patching.
3. Progress cleaning.
4. Starting and adjusting.
5. Protection of installed construction.
6. Correction of the Work.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 013591 "Historic Treatment Procedures" for historic treatment.
4. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.
5. Division 02 through 49 for specific requirements and limitations applicable to individual parts of work.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut

and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.

2. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

    a. Water, moisture, or vapor barriers.
    b. Membranes and flashings.
    c. Exterior curtain-wall construction.
    d. Sprayed fire-resistive material.
    e. Equipment supports.
    f. Piping, ductwork, vessels, and equipment.
    g. Noise- and vibration-control elements and systems.

3. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. 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 Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

B. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

1. Comply with requirements specified in Division 01 Section “Photographic Documentation.”
2. Perform Surveys as the Work progresses as outlined in drawings to detect hazards resulting from historic treatment procedures.
3. Notify the Architect if existing conditions deviate from Construction Drawings.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
5. Proceed with patching after construction operations requiring cutting are complete.

G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Exterior Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
3. Exterior Floors and Walls: Where walls that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Exterior Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

A. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

END OF SECTION 017300

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 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 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.

1.7 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.

1.8 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.

1.9 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 017823 - OPERATION AND MAINTENANCE DATA

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 preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Operation manuals for systems, subsystems, and equipment.
   3. Product maintenance manuals.
   4. Systems and equipment maintenance manuals.

B. Related Requirements:
   1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
   1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
   2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:
   1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.

      a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
      b. Enable inserted reviewer comments on draft submittals.

2. Two paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will return two copies.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Architect.
7. Name and contact information for Commissioning Authority.
8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
9. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
   1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.

F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
   1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf or post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary, to provide essential information for proper operation or maintenance of equipment or system.
      b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
   2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
   3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
   4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
   5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
      a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
      b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in

manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
   2. Performance and design criteria if Contractor has delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
   10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number. Use designations for products indicated on Contract Documents.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:
   1. Startup procedures.
   2. Equipment or system break-in procedures.
   3. Routine and normal operating instructions.
   4. Regulation and control procedures.
   5. Instructions on stopping.
   6. Normal shutdown instructions.
   7. Seasonal and weekend operating instructions.
   8. Required sequences for electric or electronic systems.
   9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Color, pattern, and texture.
   4. Material and chemical composition.
   5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard maintenance instructions and bulletins.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.

5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence

and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared record Drawings in Section 017839 "Project Record Documents."

F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

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. 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.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal on thumb drive. Provide one printed copy for Owner.

D. 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. No prints required.

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 017900 - DEMONSTRATION AND TRAINING

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 instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.

1.3 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance and design criteria if Contractor is delegated design responsibility.
c. Operating standards.
d. Regulatory requirements.
e. Equipment function.
f. Operating characteristics.
g. Limiting conditions.
h. Performance curves.

2. Documentation: Review the following items in detail:

a. Emergency manuals.
b. Operations manuals.
c. Maintenance manuals.
d. Project record documents.
e. Identification systems.
f. Warranties and bonds.
g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

a. Instructions on meaning of warnings, trouble indications, and error messages.
b. Instructions on stopping.
c. Shutdown instructions for each type of emergency.
d. Operating instructions for conditions outside of normal operating limits.
e. Sequences for electric or electronic systems.
f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

a. Startup procedures.
b. Equipment or system break-in procedures.
c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

    a. Diagnosis instructions.
    b. Repair instructions.
    c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    d. Instructions for identifying parts and components.
    e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

    1. Schedule training with Owner, through Architect, with at least seven days' advance notice.

C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

D. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 SCHEDULE

A. Provide demonstration and training for the following systems for the specified minimum duration:
    1. Air Handling Units and Dedicated Outdoor Air Units: 2 Hours
    2. Light Fixtures and Trim: 2 Hours
    3. Water Heaters: 2 Hours
    4. Electrical switchgear, panel boards and metering: 2 Hours
    5. Fire protection sprinkler systems: 2 Hours
    6. Plumbing fixtures and trim: 2 Hours

END OF SECTION 017900

SECTION 024119 - SELECTIVE DEMOLITION

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. Demolition and removal of selected portions of building or structure.
   2. Salvage of existing items to be reused or recycled.

B. Related Requirements:
   1. Section 011000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
   2. Section 017300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

C. Remove, Salvage and Store: Carefully detach from existing construction, in a manner to prevent damage, and store in Owner-designated location for use in Phase II.

D. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

E. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
   1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.
   1. Inspect and discuss condition of construction to be selectively demolished.
   2. Review structural load limitations of existing structure.
   3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.
   5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

1.7 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

1.8 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

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

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 4 feet or more.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1.9 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding.

PART 2 - PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

D. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
   1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
   1. Comply with requirements specified in Section 013233 "Photographic Documentation."
   2. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
   3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
   1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary."

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
   2. Arrange to shut off indicated utilities with utility companies.
   3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition.
   4. Electrical and gas service conduits routed to other areas of the building to remain. Coordinate necessary outages to remove service conduit(s) serving renovated building.
   5. Disconnect, demolish, and remove all systems, equipment, and components indicated to be removed.

      a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
      b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
      c. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
      d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Cover and protect furniture, furnishings, and equipment that have not been removed.
   5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.
   6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
   7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
   8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
   9. Dispose of demolished items and materials promptly.

B. Removed and Salvaged Items:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:
   1. Clean and repair items to functional condition adequate for intended reuse.
   2. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete Slabs: Saw-cut perimeter of area to be demolished, then break up and remove.

B. Siding: Ensure that building interior remains watertight and weathertight while renovating existing spaces. Special cares should be taken in the museum to protect collections.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
   1. Do not allow demolished materials to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.8 SELECTIVE DEMOLITION SCHEDULE

A. Existing Construction to Be Removed: As indicated on Drawings.

B. Existing Items to be Remove and Stored: As indicated on Drawings.

C. Existing Items to Be Removed and Reinstalled: As indicated on Drawings.

D. Existing Items to Remain: As indicated on Drawings.

END OF SECTION 024119

SECTION 030130 - MAINTENANCE OF CAST-IN-PLACE CONCRETE

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. Removal of concrete and subsequent replacement and patching.

1.3 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1. Review methods and procedures related to concrete maintenance including, but not limited to, the following:

a. Verify concrete-maintenance specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Quality-control program.
d. Coordination with building occupants.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type of Portland cement and aggregate supplied for mixing or adding to products at Project site.

B. Product Test Reports: For each manufactured bonding agent, cementitious patching mortar and joint-filler, for tests performed by manufacturer and witnessed by a qualified testing agency.

C. Quality-Control Program: Submit before work begins.

1.6 QUALITY ASSURANCE

A. Quality-Control Program: Prepare a written plan for concrete maintenance to systematically demonstrate the ability of personnel to properly perform maintenance work, including each phase or process, protection of surrounding materials during operations, and control of debris

and runoff during the Work. Describe in detail materials, methods, equipment, and sequence of operations to be used for each phase of the Work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.

B. Store cementitious materials off the ground, under cover, and in a dry location.

C. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.

1.8 FIELD CONDITIONS

A. Cold-Weather Requirements for Cementitious Materials: Do not apply unless concrete-surface and air temperatures are above 40 deg F and will remain so for at least 48 hours after completion of Work.

B. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks, and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F and above.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: For repair products, obtain each color, grade, finish, type, and variety of product from single source and from single manufacturer with resources to provide products of consistent quality in appearance and physical properties.

2.2 BONDING AGENTS

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Manufactured product that consists of water-insensitive epoxy adhesive, Portland cement, and water-based solution of corrosion-inhibiting chemicals that forms a protective film on steel reinforcement.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. BASF Corp. - Construction Chemicals.
b. Dayton Superior.
c. Euclid Chemical Company (The); an RPM company.
d. Kaufman Products, Inc.
e. Sika Corporation.
f. Sto Corp.

B. Mortar Scrub Coat: Mix consisting of 1 part Portland cement and 1 part fine aggregate complying with ASTM C 144 except 100 percent passing a No. 16 sieve.

2.3 PATCHING MORTAR

A. Patching Mortar Requirements:

1. Only use patching mortars that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.
2. Color and Aggregate Texture: Provide patching mortar and aggregates of colors and sizes necessary to produce patching mortar that matches existing, adjacent, *exposed* concrete. Blend several aggregates if necessary, to achieve suitable matches.
3. Coarse Aggregate for Patching Mortar: ASTM C 33/C 33M, washed aggregate, Size No. 8, Class 5S. Add to patching-mortar mix only as permitted by patching-mortar manufacturer.

B. Job-Mixed Patching Mortar: 1 part Portland cement and 2-1/2 parts fine aggregate complying with ASTM C 144, except 100 percent passing a No. 16 sieve.

C. Cementitious Patching Mortar: Packaged, dry mix for repair of concrete.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. BASF Corp. - Construction Chemicals.
b. Dayton Superior.
c. Euclid Chemical Company (The); an RPM company.
d. Kaufman Products, Inc.
e. Sika Corporation.
f. Sto Corp.

2. Compressive Strength: Not less than 4000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.4 JOINT FILLER

A. Epoxy Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A Shore durometer hardness of at least 80 according to ASTM D 2240.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. BASF Corp. - Construction Chemicals.
b. Dayton Superior.
c. Euclid Chemical Company (The); an RPM company.
d. Kaufman Products, Inc.
e. Sika Corporation.
f. Sto Corp.

B. Color: As selected by Architect from full range of industry colors.

2.5 POLYMER-OVERLAY MATERIALS

A. Polymer Overlay: Epoxy adhesive complying with ASTM C 881/C 881M, bonding system Type III, with surface-applied aggregate for skid resistance; free of VOCs.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. BASF Corp. - Construction Chemicals.
    b. Dayton Superior.
    c. Euclid Chemical Company (The); an RPM company.
    d. Kaufman Products, Inc.
    e. Sika Corporation.
    f. Sto Corp.

2. Aggregate: ACI 503.3, oven-dried, washed silica sand.
3. Color and Texture: As selected by Architect from full range of industry colors.

2.6 MISCELLANEOUS MATERIALS

A. Portland Cement: ASTM C 150/C 150M, Type I, II, or III unless otherwise indicated.

B. Water: Potable.

2.7 MIXES

A. General: Mix products, in clean containers, according to manufacturer's written instructions.

1. Do not add water, thinners, or additives unless recommended by manufacturer.
2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.

B. Mortar Scrub Coat: Mix dry ingredients with enough water to provide consistency of thick cream.

C. Dry-Pack Mortar: Mix required type(s) of patching-mortar dry ingredients with just enough liquid to form damp cohesive mixture that can be squeezed by hand into a ball but is not plastic.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Perform surveys as the Work progresses to detect hazards resulting from concrete-maintenance work.

3.2 PREPARATION

A. Ensure that supervisory personnel are on-site and on duty when concrete maintenance work begins and during its progress.

B. Protect persons, surrounding surfaces of building being repaired, building site, plants, and surrounding buildings from harm resulting from concrete maintenance work.

1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
2. Use only proven protection methods appropriate to each area and surface being protected.
3. Provide temporary barricades, barriers, and directional signage to exclude public from areas where concrete maintenance work is being performed.
4. Erect temporary protective covers over walkways and at points of pedestrian entrance and exit that must remain in service during course of concrete maintenance work.
5. Contain dust and debris generated by concrete maintenance work and prevent it from reaching the public or adjacent surfaces.
6. Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures and equipment that ensure that such water will not create a hazard or adversely affect other building areas or materials.
7. Protect floors and other surfaces along haul routes from damage, wear, and staining.
8. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.
9. Protect adjacent surfaces and equipment by covering them with heavy polyethylene film and waterproof masking tape or a liquid strippable masking agent. If practical, remove items, store, and reinstall after potentially damaging operations are complete.
10. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
11. Dispose of debris and runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

C. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is in working order.

1. Prevent solids such as aggregate or mortar residue from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from concrete maintenance work.
2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

D. Preparation for Concrete Removal: Examine construction to be repaired to determine best methods to safely and effectively perform concrete maintenance work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.

1. Verify that affected utilities have been disconnected and capped.
2. Inventory and record the condition of items to be removed for reinstallation or salvage.
3. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain. Strengthen or add new supports when required during progress of removal work.

E. Reinforcing-Bar Preparation: Remove loose and flaking rust from exposed reinforcing bars by high-pressure water cleaning. abrasive blast cleaning or wire brushing until only tightly adhered light rust remains.

1. Where section loss of reinforcing bar is more than 25 percent, or 20 percent in two or more adjacent bars, cut bars and remove and replace as indicated on Drawings.

2. Remove additional concrete as necessary to provide at least 3/4-inch clearance at existing and replacement bars.
3. Splice replacement bars to existing bars according to ACI 318 by lapping, welding, or using mechanical couplings.

F. Surface Preparation for Corrosion-Inhibiting Treatment: Clean concrete to remove dirt, oils, films, and other materials detrimental to treatment application.

1. Use low-pressure water cleaning or sand blasting.
2. Allow surface to dry before applying corrosion-inhibiting treatment.

3.3 CONCRETE REMOVAL

A. Saw-cut perimeter of areas indicated for removal to a depth of at least 1/2 inch. Make cuts perpendicular to concrete surfaces and no deeper than cover on reinforcement.

B. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.

C. Remove additional concrete if necessary to provide a depth of removal of at least 1/2 inch over entire removal area.

D. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar and to provide at least 3/4-inch clearance around bar.

E. Test areas where concrete has been removed by tapping with hammer and remove additional concrete until unsound and disbonded concrete is completely removed.

F. Provide surfaces with a fractured profile of at least 1/8 inch that are approximately perpendicular or parallel to original concrete surfaces. At columns and walls, make top and bottom surfaces level unless otherwise directed.

G. Thoroughly clean removal areas of loose concrete, dust, and debris.

3.4 BONDING AGENT APPLICATION

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Apply to reinforcing bars and concrete by stiff brush or hopper spray according to manufacturer's written instructions. Apply to reinforcing bars in two coats, allowing first coat to dry two to three hours before applying second coat. Allow to dry before placing patching mortar or concrete.

B. Epoxy Bonding Agent: Apply to reinforcing bars and concrete by brush, roller, or spray according to manufacturer's written instructions, leaving no pinholes or other uncoated areas. Apply to reinforcing bars in at least two coats, allowing first coat to dry before applying second coat. Place patching mortar or concrete while epoxy is still tacky. If epoxy dries, recoat before placing patching mortar or concrete.

C. Mortar Scrub Coat for Job-Mixed Patching Mortar and Concrete: Dampen repair area and surrounding concrete 6 inches beyond repair area. Remove standing water and apply scrub coat with a brush, scrubbing it into surface and thoroughly coating repair area. If scrub coat dries, recoat before placing patching mortar or concrete.

D. Slurry Coat for Cementitious Patching Mortar: Wet substrate thoroughly and then remove standing water. Scrub a slurry of neat patching mortar into substrate, filling pores and voids.

3.5 PATCHING MORTAR APPLICATION

A. Place patching mortar as specified in this article unless otherwise recommended in writing by manufacturer or where dry-pack mortar is indicated.

1. Provide forms where necessary to confine patch to required shape.
2. Wet substrate and forms thoroughly and then remove standing water.

B. Install rebar as specified in drawings.

C. Pretreatment: Apply specified bonding agent, mortar scrub coat or slurry coat, as recommended by manufacturer.

D. General Placement: Place patching mortar by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.

E. Consolidation: After each lift is placed, consolidate material and screed surface.

F. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a rough surface with a broom or burlap drag.

G. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.6 DRY-PACK-MORTAR APPLICATION

A. Use dry-pack mortar for deep cavities. Place as specified in this article unless otherwise recommended in writing by manufacturer.

1. Provide forms where necessary to confine patch to required shape.
2. Wet substrate and forms thoroughly and then remove standing water.

B. Install rebar as specified in drawings.

C. Pretreatment: Apply specified bonding agent.

D. Place dry-pack mortar into cavity by hand, and compact tightly into place. Do not place more material at a time than can be properly compacted. Continue placing and compacting until patch is approximately level with surrounding surface.

E. After cavity is filled and patch is compacted, trowel surface to match profile and finish of surrounding concrete. A thin coat of patching mortar may be troweled into the surface of patch to help obtain required finish.

F. Wet-cure patch for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.7 CONCRETE PLACEMENT

A. Place concrete according to Section 033053 "Miscellaneous Cast-in-Place Concrete" and as specified in this article.

B. Install rebar as specified in drawings.

C. Pretreatment: Apply epoxy-modified, cementitious bonding and anticorrosion agent or epoxy bonding agent to reinforcement and concrete substrate.

D. Standard Placement: Place concrete by form-and-pump method unless otherwise indicated.

1. Use vibrators to consolidate concrete as it is placed.
2. At unformed surfaces, screed concrete to produce a surface that when finished with patching mortar will match required profile and surrounding concrete.

E. Form-and-Pump Placement: Place concrete by form-and-pump method where indicated.

1. Design and construct forms to resist pumping pressure in addition to weight of wet concrete. Seal joints and seams in forms and where forms abut existing concrete.
2. Pump concrete into place from bottom to top, releasing air from forms as concrete is introduced. When formed space is full, close air vents and pressurize to 14 psi.

F. Wet-cure concrete for not less than seven days by leaving forms in place or keeping surfaces continuously wet by water-fog spray or water-saturated absorptive cover.

G. Fill placement cavities with dry-pack mortar and repair voids with patching mortar. Finish to match surrounding concrete.

3.8 FLOOR-JOINT REPAIR

A. Cut out deteriorated concrete and reconstruct sides of joint with patching mortar as indicated on Drawings. Install joint filler in nonmoving floor joints where indicated and as specified in this article.

B. Depth: Install joint filler to a depth of at least 1 inch. Use fine silica sand no more than 1/4 inch deep to close base of joint. Do not use sealant backer rods or compressible fillers below joint filler.

C. Top Surface: Install joint filler so that when cured, it is flush at top surface of adjacent concrete. If necessary, overfill joint and remove excess when filler has cured.

3.9 POLYMER OVERLAY APPLICATION

A. Apply polymer overlay according to ACI 503.3.

B. Apply to traffic-bearing surfaces, including parking areas and walks.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests and inspections:

1. Packaged, Cementitious Patching Mortar: Two randomly selected sets of samples for each type of mortar required, tested according to ASTM C 928/C 928M.
2. Job-Mixed Patching Mortar: Two randomly selected sets of samples for each type of mortar required, tested for compressive strength according to ASTM C 109/C 109M.
3. Concrete: As specified in Section 033053 "Miscellaneous Cast-in-Place Concrete."
4. Joint Filler: Core-drilled samples to verify proper installation.

    a. Testing Frequency: One sample for each 100 feet of joint filled.
    b. Where samples are taken, refill holes with joint filler.

C. Product will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION 030130

SECTION 033000 - CAST-IN-PLACE CONCRETE

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 cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture.

1.4 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. Comply with the following sections of ACI 301 unless modified by requirements in the Contract Documents:

1. "General Requirements."
2. "Formwork and Formwork Accessories."
3. "Reinforcement and Reinforcement Supports."
4. "Concrete Mixtures."
5. "Handling, Placing, and Constructing."

B. Comply with ACI 117.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type I or Type III.
2. Fly Ash: ASTM C 618, Class C or F.
3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.

C. Normal-Weight Aggregate: ASTM C 33/C 33M, ¾-inch nominal maximum aggregate size.

D. Air-Entraining Admixture: ASTM C 260/C 260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Water: ASTM C 94/C 94M.

2.4 RELATED MATERIALS

A. Vapor Retarder: Plastic sheet, ASTM E 1745, Class A or B.

B. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

2.5 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

2.6 CONCRETE MIXTURES

A. Comply with ACI 301.

B. Normal-Weight Concrete:

1. Minimum Compressive Strength: 3000 psi at 28 days.
2. Maximum W/C Ratio: 0.45.
3. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
4. Slump Limit: 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
5. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of trowel-finished floor slabs to exceed 3 percent.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR-RETARDER INSTALLATION

A. Install, protect, and repair vapor retarders according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.

1. Lap joints 6 inches and seal with manufacturer's recommended adhesive or joint tape.

3.4 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
   1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
   1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

D. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

C. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

   1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.

3.6 CONCRETE PLACEMENT

A. Comply with ACI 301 for placing concrete.

B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

C. Do not add water to concrete during delivery, at Project site, or during placement.

D. Consolidate concrete with mechanical vibrating equipment according to ACI 301.

3.7 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections exceeding 1/2 inch.

1. Apply to concrete surfaces not exposed to public view.

B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

END OF SECTION 033053

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 061000 - ROUGH CARPENTRY

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

This Section includes the following:
1. Framing with dimension lumber.
2. Wood blocking and nailers.
3. Wall sheathing material.
4. Miscellaneous wood.

1.3 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Division 01 Section "Historic Preservation Treatment Procedures."

1.4 REFERENCES

A. PS 1 - Construction and Industrial Plywood; National Institute of Standards and Technology (Department of Commerce); 2007.

B. PS 20 American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 1994.

C. SPIB (GR) – Standard Grading Rules for Southern Pine Lumber; Southern Pine Inspection Bureau, Inc.; 1994.

D. APA PRP-108 - Performance Standards and Policies for Structural-Use Panels; 2002.

1.5 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal or greater.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. SPIB: The Southern Pine Inspection Bureau.
4. WCLIB: West Coast Lumber Inspection Bureau.
5. WWPA: Western Wood Products Association.

C. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise specified.

1.6 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

C. Plywood:

1. Comply with PS 1 where veneer plywood is specified.
2. Comply with APA PRP-108 where APA rated panels are specified; bearing APA trademark showing compliance with each specified requirement.

D. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:

1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards and rules, regulations, and restrictions of applicable governing authorities.
2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.
3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

E. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Power-driven fasteners.

F. Warranty of chemical treatment manufacturer for each type of treatment.

1.7 QUALITY ASSURANCE

A. Quality of Materials and Workmanship: Provide woodwork that complies with requirements of "Architectural Woodwork Quality Standards," published by Architectural Woodwork Institute (AWI) (hereinafter referred to as "woodworking standard").

B. Where contract documents indicate deviations from the woodworking standard, the contract documents shall govern.

C. Installer:
1. Maintain throughout duration of the work a crew who is fully qualified to satisfy requirements of the specifications.
2. Maintain throughout the duration of the work a qualified superintendent.

D. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.

1. Acceptable Inspection Agencies: SPIB - Southern Pine Inspection Bureau.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect wood against moisture and dimensional changes. Support stacks at several uniformly spaced points to prevent deformation. Store stacks raised above ground. Cover to protect from rain and snow. Select and arrange cover to allow air circulation under and all around stacks to prevent condensation. Remove from the site any wood products that have been subjected to moisture or that do not comply with the specified moisture requirements. Stack lumber, plywood, and other panels.

1. Protect all lumber from rain, fog, snow, dew, and all other forms of moisture that may alter moisture content above specified requirements. The moisture content of lumber and plywood may be checked in the field with a reliable moisture meter.
2. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

1.9 PROJECT CONDITIONS

A. Fit woodwork to actual construction. Take field measurements before fabricating woodwork.

B. Coordinate installation of woodwork with other work to avoid damage.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: Comply with DOC PS 20, “American Softwood Lumber Standard.” and with applicable rules of inspection grading agencies certified by ALSC’s Board of Review.

1. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
2. Provide dressed lumber, S4S, unless otherwise indicated.
3. Maximum moisture content: Provide kiln-dried lumber with a maximum moisture content between 6 and 11 percent. Maintain temperature and relative humidity during fabrication, storage and finishing operation so that moisture content values for wood at the time of installation do not exceed the above range.
4. Additional Restriction: Free of heart centers.
5. Texture: Smooth, flat, tight grain surface that will not telegraph grain through painted finish. Solid lumber stock, finger joints not acceptable. All wood and lumber shall be sound, properly seasoned, and dry and be straight, flat and true, free of twists, warps, bends, racking, knots, sap, splinters, cracks, nicks, gouges, and bark. Edges and sides shall be uniform in dimension and shape with no signs of bark removal.
6. Grade Stamps:
    a. Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
    b. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.

2.2 DIMENSION LUMBER

A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

B. For items of dimension lumber size, provide grade lumber of the following species for locations indicated on the structural drawings:

1. Species: Southern pine; SPIB.
2. Grade: Non-Dense Select Structural, Select Structural or Dense Select Structural, No. 1 grade for locations as indicated on the drawings.
3. Maximum moisture content for untreated lumber: 6 to 11 percent.
4. Additional Restriction: Free of heart centers.

2.3 MISCELLANEOUS LUMBER

A. General:

1. Provide lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
2. Provide lumber for support or attachment of other construction, including cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
3. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.

B. For items miscellaneous, provide grade lumber of the following species:

1. Species: Southern pine; SPIB.
2. Grade: Non-Dense Select Structural, Select Structural or Dense Select Structural, No. 1 grade for locations as indicated on the drawings.
3. Maximum moisture content for untreated lumber: 6 to 11 percent.
4. Additional Restriction: Free of heart centers.

2.4 WOOD PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground or masonry, Use Category UC3b for exterior construction not in contact with the ground or masonry, and Use Category UC4a for items in contact with the ground or masonry.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Drying requirements:

1. Prior to sizing and pressure treating lumber, dry to 19 percent.
2. After treatment, kiln-dry lumber and plywood to a maximum moisture content, as follows:
   a. Lumber: 19 percent
   b. Plywood: 15 percent.
3. Do not use material that is warped or that does not comply with requirements for untreated material. Use in locations as indicated on the drawings.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Obtain lumber only from true lumber yards that specialize in lumber and wood building materials and that are capable of kiln-drying lumber that meets these drying requirements or can provide such lumber.

E. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, framing, supporting members, and similar concealed members in contact with masonry or concrete.
3. Wood supporting members used in the construction of suspended decks or porch decks, moist or humid air, or enclosed construction that is exterior to the building envelope.
4. Wood framing members less than 40 inches above grade.
5. Wood floor plates that are installed over concrete slabs directly in contact with earth.

F. Retention Rates

1. for lumber treated with ACQ: 0.40 pcf
2. for lumber treated with CA-B: 0.21 pcf
3. for lumber treated with CBA-A: 0.41 pcf
4. for lumber treated with CA-C: 0.15 pcf
5. for lumber treated with µCA-C: 0.15 pcf

G. Complete fabrication of treated items before treatment, where possible. If cut, drilled, or scratched, or otherwise abraded after treatment, apply field treatment complying with AWPA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.5 PLYWOOD, GENERAL

A. Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D5456 and manufactured with an exterior-type adhesive complying with ASTM D2559 and containing no urea formaldehyde.

B. Provide plywood panels complying with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood," where plywood is indicated. Factory mark structural-use panels with APA trademark evidencing compliance with grade requirements. Certification: Provide certification that plywood, untreated with fire-retardant, meets Standard Building Code Congress requirements for a flame spread of 200 or less (Class C) when tested in accordance with ASTM E84.

2.6 WOOD SHEATHING

A. Plywood Sheathing: DOC PS 1, Exposure 1 sheathing.

1. Span Rating: Not less than 24/0.
2. Nominal Thickness: Not less than 1/2 inch.

B. Thicknesses: Where nominal thicknesses are indicated, provide actual thickness to match existing, providing other project requirements such as grade, span rating, exposure, etc., are met:

1. 1/2 inch nominal: 7/16, 15/32, or 1/2 inch actual.
2. 5/8 inch nominal: 19/32, 5/8, or 21/32 inch actual.
3. 3/4 inch nominal: 11/16 or 3/4 actual.
4. 1 inch nominal: 1 inch actual.
5. 1-1/8 inch nominal: 1-1/8 inch actual.
6. 1-1/4 inch nominal: 1-1/4 inch actual.

2.7 FASTENERS

A. General:

1. All wood fastenings shall be per IBC Table 2304.9.1 “Fastening Schedule” unless noted otherwise.
2. Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture for locations indicated on drawings.
3. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide stainless steel fasteners of Type 304, 304L, 316 or 316L, unless otherwise indicated.
4. All steel fasteners in contact with pressure-preservative treated wood shall be stainless steel Type 304, 304L, 316 or 316L, unless otherwise indicated.

B. Nails, Wire, Brads, and Staples: ASTM F 1667. Nails shall be of the thickness required to penetrate 2/3 of the substrate.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ANSI/ASME B18.6.1 and shall be of sufficient length to penetrate backing material a minimum of one inch.

E. Bolts and Nuts: Shall meet ASTM A307, grade A, with, ASTM A563 with hex nuts, where indicated on drawings, flat washers.

F. Lag Bolts: ANSI/ASME B18.2.1.

G. Machine Screws: ANSI/ASME B18.6.3.

H. Plain Washers: Round, carbon steel, ANSI/ASME B18.22.1.

I. Lock Washers: Helical, spring type, carbon steel, ANSI/ASME B18.21.1.

J. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as required.

K. Spacing: See Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Thoroughly examine and document existing conditions prior to beginning successive phases of Work.
2. Note locations on drawings where examination of members and confirmation of deterioration by Engineer or Architect is required before replacement.

3.2 DISASSEMBLY

A. Disassemble all associated elements as required.

B. Remove architectural millwork by cutting through shaft of nail fasteners. Do not pull nails through; this will damage millwork. Use hacksaw blades mounted on handles intended for that purpose.

3.3 INSTALLATION, GENERAL

A. Remove miscellaneous hardware, nails, etc., from all existing woodwork.

B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

C. Apply field treatment complying with AWPA M4 to cut or abraded surfaces of preservative-treated lumber and plywood.

D. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim

F. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

G. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

H. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

I. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid.

J. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated on drawings, if not otherwise noted comply with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

K. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

L. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

M. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.

1. Comply with indicated or approved fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
2. Use finishing nails, unless otherwise indicated. Countersink nail heads and fill holes with wood filler. Indicate locations of other fasteners, such as wood screws, bolts, and lag screws, on Drawings.

N. Pre-drill members when necessary to avoid splitting wood.

O. Back Priming: For all wood materials scheduled to be painted, including treated wood, back prime, including all edges and concealed surfaces, prior to installation. Apply primer to the same specifications as for the exposed surfaces. Treat all cut edges, end cuts, and disturbed surfaces the same way. Wood items shall be completely encapsulated with primer. Installed items not back-primed shall be removed, properly primed, and reinstalled at the Contractor’s expense. Damaged materials shall be replaced. This provision applies to both interior and exterior installations.

3.4 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

END OF SECTION 061000

SECTION 062012 – EXTERIOR FINISH CARPENTRY

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. 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.
   2. Quality Standard: Architectural Woodwork Institute's "Architectural Woodwork Quality Standards."
   3. Architectural Woodwork Institute: AWI Quality Standards Illustrated.
   4. Forest Stewardship Council’s (FSC) Principles and Criteria for Forest Stewardship.

1.2 SUMMARY

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

   1. Preparation of existing wooden elements for new work.
   2. Repair and restoration of deteriorated wooden elements.
   3. Replacement of missing elements.
   4. Sealing of penetrations.
   5. Replacement of specified features as chosen by the Architect.

1.3 SCOPE

A. Provide finish carpentry items as shown, as specified, or as required to support finished work.

1.4 PROJECT CONDITIONS

A. Keep carpentry materials dry during delivery. Store lumber in stacks with provision for air condition through stacks. Protect bottom of stacks against contact with damp or wet surfaces. Protect exposed materials against weather.

B. Do not store dressed or treated lumber or plywood outdoors. Store materials for which a maximum moisture content is specified, only in areas where relative humidity has been reduced to a level where specified moisture content can be maintained with a tolerance of plus or minus 1%.

C. Protect installed work from damage by work of other trades until Architect’s acceptance of work. Adhere to required protection procedures.

1. Presence of mildew or dry rot on any wood surface will be grounds for rejection.

1.5 SUBMITTALS

A. Submittals:
   1. Product Data: Submit product data and applicable MSDS sheets for all materials specified within this section.
   2. 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.
   3. Lead Tradesman Qualifications: Submit resume for lead carpenter. Must have a minimum of five (5) years demonstrated experience restoring finish carpentry.

1.6 ENVIRONMENTAL CONDITIONS

A. Weather Limitations for Exterior Work: Proceed with installation of exterior wood trim only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish to be applied without exposure to rain, snow, or dampness.

1.7 QUALITY ASSURANCE

A. This structure is an historic building. The exterior finish carpentry work on this project is critical to the satisfactory execution of the work.

1.8 DELIVERY, STORAGE, AND HANDLING

A. It is the joint responsibility of the woodwork manufacturer and the Contractor to make certain that woodwork is not delivered until the building and storage areas are sufficiently dry and complete so that the woodwork will not be damaged. The Contractor will replace defective or damaged materials at no cost to the Architect.

B. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

C. Protect all finished surfaces after installation and finishing from damage and soiling. Maintain protection during subsequent work operations and remove same upon acceptance or when instructed by Architect.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Use lumber bearing the official trademark and grade of the manufacturer's association or inspection bureau under which it was manufactured and graded, except as specified otherwise herein. Use seasoned lumber, surfaced four sides and kiln or air dried to moisture content specified in association's rules, except that moisture content is limited to a maximum of 11 percent. Wood-based materials and products to be certified in accordance with Forest Stewardship Council's (FSC) Principles and Criteria for Forest Stewardship.

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

2.2 EXTERIOR FINISH CARPENTRY

A. Wood Materials: Restroom Walls (Vertical Boards)
   1. Provide material that has been kiln dried after treatment, moisture content must be below 12%. Pre-prime and apply a minimum of one coat of finish paint on all sides prior to installation.
   2. Species and Grade: Species and Grade: C & Better pressure-preservative-treated southern pine; SPIB shall be used for all new and replacements pieces. Substitutions must be approved by the Architect.
   3. Pattern: Overall dimensions, pattern, and surface texture to match existing and as specified in Drawings.

2.3 MISCELLANEOUS MATERIALS

A. Caulking Materials: Sealant with 20-year life expectancy. 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

B. 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

C. 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

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

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Verify adequacy of backing and support framing.

C. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.

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

E. Clean substrates of projections and substances detrimental to application.

3.2 FABRICATION

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

3.3 INSTALLATION, GENERAL

A. Replace and repair woodwork as specified by Drawings.

B. Provide all wood blocking and framing required to support items of finish carpentry. Use fastening materials of types appropriate for the conditions encountered, including wood to wood, wood to masonry, and wood to metal stud framing. Counterbore holes for nuts and bolt heads, and countersink for screws. Use concealed fasteners in exposed surfaces of finish carpentry.

C. Install woodwork to comply with referenced quality standard for grade specified.

D. Install woodwork true and straight with no distortions. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

E. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

F. Dutchman Repairs

1. Dutchman repairs shall be undertaken using the same material as the original unless otherwise specified. Species and grain to match. Match existing detailing.
2. Substitutions in material must be approved by Architect.

3.4 STANDING AND RUNNING TRIM INSTALLATION

A. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 36 inches (900 mm) long, except where shorter single-length pieces are necessary. Scarf running joints and stagger joints in adjacent and related trim. Cope at returns and miter at corners.

B. Timely delivery and installation of carpentry work to avoid delaying other trades whose work is dependent on or affected by the carpentry work, and to comply with protection and storage requirements.

C. Examine all parts of the supporting structure and the conditions under which the carpentry work is to be installed, and notify the Architect, in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.5 ADJUSTING

A. Replace exterior finish carpentry that is damaged or does not comply with requirements. Exterior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.

3.6 CLEAN UP

A. Clean interior and exterior finish carpentry on exposed and semi-exposed surfaces. Touch up finishes to restore damaged or soiled areas

B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged as indicated by the Architect.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062012

SECTION 072100 - BUILDING INSULATION

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. This Section includes the following:

1. Concealed building insulation.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for insulation products.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Surface-Burning Characteristics: ASTM E 84.
2. Fire-Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PART 2 - PRODUCTS

2.1 GLASS-FIBER BLANKET INSULATION

A. Manufacturers: Provide products by one of the following or equal:

1. CertainTeed Corporation.
2. Guardian Fiberglass, Inc.
3. Johns Manville.
4. Knauf Fiber Glass.
5. Owens Corning.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics; formaldehyde-free.

C. Where glass-fiber blanket insulation is indicated by the following thicknesses, provide blankets in batt or roll form with thermal resistances indicated:

1. 3-1/2 inches thick with a thermal resistance of 13 deg F x h x sq. ft./Btu at 75 deg F.
2. 5-1/2 inches thick with a thermal resistance of 19 deg F x h x sq. ft./Btu at 75 deg F.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for Sections in which substrates and related work are specified and other conditions affecting performance.

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

3.2 PREPARATION

A. Clean substrates of substances harmful to insulations, including removing projections capable of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice and snow.

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Water-Piping Coordination: If water piping is located on inside of insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

E. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Install mineral-fiber blankets in cavities formed by framing members according to the following requirements:

1. Use blanket widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
2. Place blankets in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

3.5 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 072500 - WEATHER BARRIERS

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. Building paper.
2. Flexible flashing.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For flexible flashing, from ICC-ES.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

A. Building Paper: ASTM D 226, Type II (No. 30 asphalt-saturated organic felt), unperforated.

2.2 MISCELLANEOUS MATERIALS

A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.040 inch.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Vycor PRO Butyl Self Adhered Flashing.
b. Protecto Wrap Company; BT-25 XL.
c. Raven Industries Inc.; Fortress Flashshield.

B. Primer for Flexible Flashing: Product recommended by manufacturer of flexible flashing for substrate.

C. Nails and Staples: ASTM F 1667.

D. Water-Resistive Barrier
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Fortifiber Jumbo Tex 60 Weather-Resistive Barrier
      b. An approved equal.

PART 3 - EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

A. Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing immediately after sheathing is installed. Barrier to be continuous at transition between walls.

B. Cover sheathing with water-resistive barrier as follows:

   1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.
   2. Apply barrier to cover vertical flashing with a minimum 3-1/2-inch side lap and 6-inch end lap, unless otherwise indicated.

C. Alternative Installation for existing walls: Line stud cavities with water-resistive barrier securely fastened to framing. Barrier to be continuous at transition between walls.

D. Building Paper: Apply horizontally with a 3-1/2-inch side lap and a 6-inch end lap; fasten to sheathing with galvanized staples or roofing nails. Barrier to be continuous at transition between walls.

3.2 FLEXIBLE FLASHING INSTALLATION

A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.

   1. Prime substrates as recommended by flashing manufacturer.
   2. Lap seams and junctures with other materials at least 3-1/2 inches on sides and 6 inches on ends, except that at flashing flanges of other construction, laps need not exceed flange width.
   3. Lap flashing over water-resistive barrier at bottom and sides of openings.
   4. Lap water-resistive barrier over flashing at heads of openings.
   5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

END OF SECTION 072500

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.

B. Related Sections:
1. Section 013591: “Historic Treatment Procedures”.
2. Section 076200 "Sheet Metal Flashing and Trim".
3. Section 077123 “Gutters and Downspouts”.

1.3 ACTION SUBMITTALS

A. Product Data: 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.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

C. Field-Adhesion Test Reports: For each sealant application tested.

D. Warranties: Sample of special warranties.

1.5 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.

1.6 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.

1.7 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. Stain-Test-Response Characteristics: Where elastomeric 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.

2.4 URETHANE JOINT SEALANTS

A. Single-Component, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type S, Grade P, Class 25, for Use T.
   1. Products:
      a. BASF Building Systems; Sonolastic SL 1.
      b. Pecora Corporation; Urexpan NR-201.
      c. Sika Corporation. Construction Products Division; Sikaflex - 1CSL.
      d. Tremco Incorporated; Vulkem 45.

B. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
   1. Products:
      a. Sika Corporation, Inc.; Sikaflex - 1a.
      b. BASF Building Systems; Sonolastic NP1.
      c. Tremco; Vulkem 116.

2.5 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. BASF Building Systems; Sonolastic NP1.
      b. 3M; Marine Adhesive Sealant 5200

2.6 SILYL-TERMINATED POLYETHER (STPE) JOINT SEALANTS

A. STPE, S, NS, NT: Single-component, nonsag, at least plus 35 percent and minus 35 percent movement capability, nontraffic-use, silyl-terminated polyether joint sealant; ASTM C 920, Type S, Grade NS, Use NT.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. GE Construction Sealants; SCS7000.
      b. Pecora Corporation; DynaTrol I-XL Tru-White.
      c. Sherwin-Williams Company (The); Stampede 100.
      d. Tremco Incorporated; Dymonic FC.

2.7 LATEX JOINT SEALANTS

A. Latex Sealant: Comply with ASTM C 834, Type P, Grade NF.
   1. Products:
      a. Pecora Corporation; AC-20+.
      b. Sonneborn, Division of ChemRex Inc.; Sonolac.
      c. Tremco; Tremflex 834.

2.8 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.

2.9 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.

3.6 JOINT-SEALANT SCHEDULE

A. Exterior joints in vertical and horizontal traffic surfaces.

1. Joint Locations:
    a. Isolation and contraction joints in cast-in-place concrete slabs.
    b. Joints between different materials listed above.
    c. Other dynamic joints as indicated.
2. Joint Sealant: One-component, elastomeric, gun-grade polyurethane sealant
3. Joint-Sealant Color: As selected by Architect from manufacturers full range of colors.

B. Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
    a. Control and expansion joints in unit masonry.
    b. Joints between metal panels.
    c. Joints between different materials listed above.
    d. Perimeter joints between materials listed above and frames of doors and windows.
    e. Control and expansion joints in ceilings and other overhead surfaces.
    f. Other dynamic joints as indicated.
    g. Construction joints in copper flashing.
    h. Joints between copper flashing and stucco masonry.
    i. Joints between copper flashing and woodwork.
2. Joint Sealant: Paintable single component non-sag urethane sealant, as recommended by manufacturer.
3. Joint-Sealant Color: As selected by Architect from manufacturers full range of colors.

C. Interior joints in vertical surfaces and horizontal nontraffic surfaces:

1. Joint Locations:
    a. Perimeter joints of exterior openings where indicated.
    b. Perimeter joints between interior wall surfaces and frames of interior doors.
    c. Other joints as indicated.
2. Joint Sealant: Paintable latex sealant, as recommended by manufacturer.
3. Joint-Sealant Color: As selected by Architect from manufacturers full range of colors.

D. Perimeter joints between interior wall surfaces and casework, and frames of interior doors and windows.
   1. Joint Sealant: Latex sealant.

E. Joint-Sealant Color: As selected by Architect from manufacturers full range of colors.

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.

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 weatherstripping to be set in appropriate groove. Notify Architect if felt weatherstripping 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 081113 - HOLLOW METAL DOORS AND FRAMES

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. Section 087100: Door Hardware

1.2 SUMMARY

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

1. Replacement of damaged elements and hardware of existing steel doors (Doors 102 & 103).
2. Installation of new steel doors (Doors 104, 105, 106)

1.3 SCOPE

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

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

C. Shop Drawings: Include the following:

1. Elevations of each door design.
2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of anchorages, joints, field splices, and connections.
6. Details of accessories.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".

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

1.6 DELIVERY AND STORAGE

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

D. 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.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.8 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

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.

1.9 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.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
   1. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Curries Company (Basis of Design)
   2. Ceco Door Products
   3. Republic
   4. Steelcraft
   5. Member of NAAMM - Substitutions: Material from custom hollow metal door and frame fabricators will not be accepted without prior written and sample approval in accordance with requirements specified in Division 01. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 STANDARD HOLLOW METAL DOORS

A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.

B. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements in ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

C. Basis-of-Design: Curries Company, 707 Composite Series, flush panel 1 ¾"exterior door, polystyrene core, 18-guage face skin. Coordinate door features with Hardware Schedule and Specification Section 087100 Door Hardware. Door frame profile to match existing Door 102.

D. HARDWARE
1. See Section 087100 Door Hardware.

E. Fasteners: All fasteners shall be stainless steel grade 304 or better.

2.4 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:

1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape.

PART 3 - EXECUTION

3.1 TREATMENT OF EXISTING STEEL DOORS, GENERAL

A. General: In treating historic items, disturb them as minimally as possible and as follows:
1. Replace hardware according to Section 087100 - Door Hardware.
2. Repaint steel doors according to Section 099000 – Architectural Coatings unless otherwise indicated.

B. Protection of Openings: Where exterior doors are indicated for removal, cover resultant openings with temporary enclosures so that openings are weathertight during repair period.

C. Hardware: Repair and retain existing locksets and return to good operating condition.

3.2 TREATEMENT OF NEW STEEL DOORS (EXAMINATION)

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

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

3.3 PREPARATION

A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

E. Protect adjacent materials from damage by treatment of steel doors.

3.4 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
   1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
   2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
   3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
   4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

   1. Non-Fire-Rated Standard Steel Doors:
   2. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
   3. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
   4. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
   5. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.5 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat or painted finishes and apply touchup of compatible air drying, rust-inhibitive primer or paint.

3.6 CLEAN UP

A. Protect door surfaces from contact with contaminating substances resulting from construction operations. Monitor door surfaces adjacent to and below exterior concrete and masonry during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances contact door surfaces, remove contaminants immediately.

B. Clean exposed surfaces immediately after treatment of steel doors. Avoid damage to coatings and finishes. Remove excess sealants, glazing and repair materials, dirt, and other substances.

C. Upon completion of door work, 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.

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

END OF SECTION 081113

SECTION 087100 - DOOR HARDWARE

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. Work under this section comprises of furnishing and installing commercial door hardware needed for a complete and operational system for following:
   1. Restroom Doors (new and renovated restrooms).

1.1 REFERENCES

A. Publications listed herein are part of this specification to extent referenced.
B. American National Standards Institute:
   1. ANSI A156 Series
   2. ANSI A115W Wood Door Hardware Standards; Hardware Preparation
   3. ANSI A117.1 Accessible and Usable Buildings and Facilities
C. Americans with Disabilities Act Accessibility Guidelines (ADAAG)
D. Door and Hardware Institute:
   1. DHI Publication - Abbreviations and Symbols
   2. DHI Publication - Basic Architectural Hardware
   3. DHI Publication - Hardware for Labeled Fire Doors (with supplements)
   4. DHI Publication - Hardware Reinforcements on Steel Doors and Frames
   5. DHI Publication - Installation Guide for Doors and Hardware
   6. DHI Publication - WDHS-1 Template Book Criteria for Wood Doors
   7. DHI Publication - WDHS-3 Recommended Hardware Locations for Wood Flush Doors
   8. DHI Publication - For Processing Hardware Schedules and Templates

1.3 DOOR HARDWARE

A. Door Hardware Selection: Furnish and install door hardware selected by Architect.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer’s technical product fact sheets describing each item of hardware to be provided including material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples: Submit samples of door hardware items if requested by Architect. Accepted samples may be incorporated into Work.

C. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

D. Keying Schedule: All cylinders for exterior doors to be keyed to match the existing lock at Door 102.

E. Maintenance Data: For each type of door hardware to include in maintenance manuals specified in Division 01.

F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Supplier Qualifications: Door hardware supplier with warehousing facilities in Project's vicinity and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedules.

C. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

D. Regulatory Requirements: Comply with provisions of the following:

1. Accessibility Requirements: Comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design and ICC A117.1 for door hardware on doors in an accessible route.

    a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
    b. Door Closers: Comply with the following maximum opening-force requirements indicated:
        1) Size closers in compliance with requirements for accessibility for handicapped and recommendations of manufacturer. Provide barrier free and delayed action features as needed. Comply with following maximum opening-force requirements:
            a) Interior Hinged Doors: 5.0 lbs.
            b) Exterior Hinged Doors: 8.5 lbs.
    c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.

E. Fire Doors: Minimum opening force allowable by authorities having jurisdiction

1. NFPA 101: Comply with the following or means of egress doors:

    a. Latches, Locks, and Exit Devices: Not more than 15 lb to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
    b. Delayed-Egress Locks: Lock releases within 15 seconds after applying a force not more than 15 lbf for not more than 3 seconds.
    c. Door Closers: Not more than 30 lb to set door in motion and not more than 15 lbf to open door to minimum required width.
    d. Thresholds: Not more than 1/2 inch high.

2. Building Code: International Building Code/Existing Building Code.

F. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.

G. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
    1. Review requirements for key control system.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Site.

B. Tag each item or package separately with identification related to final Door Hardware Schedule and include basic installation instructions with each item or package.

C. Deliver keys to Owner by registered mail or overnight package service.

1.7 COORDINATION

A. Templates:
   1. Obtain and distribute templates for doors, frames and other work specified to be factory prepared for installing door hardware to parties involved.
   2. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with specified requirements.

B. Existing Doors and Frames:
   1. Examine all existing doors and frames scheduled to be reused in the project prior to scheduling the door hardware. Notify the architect of any exceptions to the specified hardware with the existing doors and/or frames.

1.8 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Specialty Warranty: Provide written warranty executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include but are not limited to following:
   1. Structural failures including excessive deflection, cracking or breakage
   2. Faulty operation of operators and door hardware
   3. Deterioration of metals, metal finishes and other materials beyond normal weathering

C. Warranty period shall be for not less than 3 year from Date of Substantial Completion unless otherwise indicated.
   1. Manual Closers: 10 years

1.9 MAINTENANCE

A. Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance and removal and replacement of door hardware.

B. Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of door hardware installer.

C. Provide parts and supplies as used in manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General Requirements:
   1. Hardware shall be of best grade, entirely free of imperfections in manufacture and finish and shall satisfactorily perform various functions needed.
   2. Furnish necessary screws, bolts or others fastenings of suitable size and type to anchor hardware in position and match hardware as to material and finish. Provide Phillips flat-head screws except as otherwise indicated.

3. Do not use through-bolts for installations where bolt head or nut opposite face is exposed in other work. Use of sex bolts shall not be allowed.
4. Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as indicated. Items of hardware not definitely specified, but needed for satisfactory installation of hardware shall be provided. Such items shall be of type and quality suitable for service needed and comparable to adjacent hardware.
5. Finishes shall comply with ANSI A156.18/ BHMA 1301. Finish designations cross references shall be as follows:

BHMA Code	Description	Nearest US Equiv.	BHMA Category	Basis Metal
606	Satin brass; clear coated	US4	A	Brass
612	Satin bronze; clear coated	US10	A	Bronze
639	Satin bronze; clear coated	US10	E	Steel
691	Aluminum painted	US10	E	Any

B. Substitutions
1. No substitutions. Hardware to match existing.

2.2 CYLINDERS AND KEYING

A. Keying System: Unless otherwise indicated, provide a factory-registered keying system complying with the following requirements:

1. All cylinders for exterior doors to be keyed to match the existing lock at Door 102.)

B. Keys: Provide nickel-silver keys complying with the following:

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

a. Notation: "DO NOT DUPLICATE."

2.3 FABRICATION

A. Manufacturer's Nameplate: Do not provide manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise approved by Architect.

1. Manufacturer's identification will be permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

C. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2. Stainless-Steel Through Bolts: For the following fire-rated applications, unless door blocking is provided:

   a. Surface hinges to doors.
   b. Closers to doors and frames.
   c. Surface-mounted exit devices.

3. Spacers or Barrel Bolts: For through bolting of hollow metal doors.

D. Closers shall be sealed and filled with all-weather fluid. Provide stable hydraulic fluid to withstand a temperature range of 120 degrees F to minus 30 degrees F.

2.4 FINISHES

A. Standard: Comply with BHMA A156.18.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. BHMA Designations: Comply with base material and finish requirements indicated by the following:

1. BHMA 619: Satin nickel plated, clear coated, over brass or bronze base metal.
2. BHMA 626: Satin chromium plated over nickel, over brass or bronze base metal.
3. BHMA 627: Satin aluminum, clear coated, over aluminum base metal.
4. BHMA 628: Satin aluminum, clear anodized, over aluminum base metal.
5. BHMA 630: Satin stainless steel, over stainless-steel base metal.
6. BHMA 652: Satin chromium plated over nickel, over steel base metal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames with Installer present for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction and other conditions affecting performance.

B. The Hardware Supplier and the GC shall verify all existing door and frame conditions prior to ordering new hardware. Verify all new hardware applications are acceptable per the specified hardware. Notify the architect of any exceptions.

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

D. Commencement of installation constitutes acceptance of conditions and responsibility for satisfactory performance.

3.2 INSTALLATION

A. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
   1. Securely install finish hardware items in compliance with accepted schedule and templates furnished with hardware.
   2. Install mortised items flush with adjacent surfaces.
   3. Install locksets, surface mounted closers and trim after finishing of doors and frames is complete.
   4. Where cutting and fitting is needed to install door hardware onto or into surfaces that are to be painted or finished in another way later, coordinate removal, storage, and reinstallation of door hardware with finishing work.
   5. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
   6. Drill and countersink units not factory-prepared for anchorage fasteners. Space fasteners and anchors in compliance with industry standards.
   7. All gasketing and/or weatherstripping shall be installed on frames after the final paint coat is applied. Gasketing, Weatherstripping and mullion seals are not to be painted. Install in accordance with the manufacturer’s instructions.

B. Mounting Heights:
   1. Mount door hardware units at heights indicated in following applicable publications, unless otherwise specifically indicated or required to comply with governing regulations:
      a. Steel Doors and Frames: ANSI A250.6
         1) DHI Publication Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames
         2) DHI Publication Recommended Locations for Builders’ Hardware for Custom Steel Doors and Frames
      b. Wood Doors: DHI Publication WDHS-3

C. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.3 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
   1. Adjust door closer sweep period so that from an open position of 70 degrees door will take at least 3 seconds to move to a point 3” from latch measured to leading edge of door.
   2. Return to Project during week prior to Substantial Completion and make final check and adjustment of hardware items.

3. Adjust hardware so doors operate in perfect order. Test and adjust hardware for quiet, smooth operation, free of sticking, binding or rattling. Adjust closers for proper, smooth operation.
4. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

B. Six Month Occupancy Adjustment:
1. Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware and electrified door hardware.
2. Consult with, and instruct, Owner's personnel on recommended maintenance procedures.
3. Replace door hardware items that have deteriorated or failed due to faulty design, materials or installation.

3.4 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.5 DOOR HARDWARE SETS

A. HARDWARE SET NO. 01 – ALL NEW RESTROOM DOORS (DOORS 104, 105,106)

3	EA	HINGE	STAINLESS ST., MATCH HINGE SIZE OF ADJ. DOORS		
1	SET	WEATHERSTRIP	S88GR	GR	PEM
1	EA	SWEEPS	3452CPK 36"	AL	PEM
1	EA	THRESHOLD	171 A 36"	AL	PEM
1	EA	SURFACE CLOSER	4011	689	LCN

1. THE HARDWARE SUPPLIER & THE GC SHALL REVIEW ALL EXISTING CONDITIONS FOR NEW HARDWARE. NOTIFY THE ARCHITECT OF ANY EXCEPTIONS.

B. HARDWARE SET NO. 02 – EXISTING RESTROOM DOOR (DOOR 102)

3	EA	HINGES	MATCH EXISTING SIZE		
1	SET	WEATHERSTRIP	S88GR	GR	PEM
1	EA	SWEEPS	3452CPK 36"	AL	PEM
1	EA	THRESHOLD	171 A 36"	AL	PEM
1	EA	SURFACE CLOSER	4011	689	LCN

1. EXISTING HINGES SHALL BE REPLACED WITH STAINLESS STEEL HINGES AND FASTENERS.

C. HARDWARE SET NO. 02 – EXISTING MAINTENANCE DOORS (DOOR 103)

6	EA	HINGES	MATCH EXISTING SIZE

1. EXISTING HINGES SHALL BE REPLACED WITH STAINLESS STEEL HINGES AND FASTENERS.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes.

END OF SECTION 087100

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: Rosendale Natural Cement 10C as manufactured by Edison Coatings, Inc., Plainville, CT (800) 341-6621.
   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 Edison Coatings 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 092900 - GYPSUM BOARD

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. This Section includes the following:

1. Interior fiberglass mat gypsum board with level 4 skim finish on all walls and ceilings in new and renovated restrooms.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

C. Closeouts: Product Warranties

1.4 QUALITY ASSURANCE

A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

1.5 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

D. WARRANTY
1. Provide products that offer twelve months of coverage against in place exposure damage (delamination, deterioration and decay).

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Georgia-Pacific Gypsum.
   b. USG Corporation.

B. Abuse-Resistant Gypsum Board: ASTM C 1629/C 1629M, Level 1.
1. Core: 5/8” nominal
2. Faces: With fiberglass mat laminated to both sides.
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
5. Products: Subject to compliance with requirements, provide one of the following:
   a. G-P Gypsum Company; DensArmor Plus Abuse Guard Interior Drywall.
   b. United States Gypsum Co.; FIBEROCK Brand AR Gypsum Panels.

2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Plastic
2. Shapes:

   a. Cornerbead.
   b. LC-Bead: J-shaped; exposed long flange receives joint compound.
   c. Expansion (control) joint.

2.4 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
   1. Glass-Mat Faced Gypsum Board: 10-by-10 glass mesh.

C. Joint Compound for Glass-Mat Faced Gypsum Board Applications:

   1. Glass-Mat Gypsum Board: As recommended by board manufacturer.

2.5 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

   1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

   1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

D. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."

E. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

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

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840 and manufacturers recommendations.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

J. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

K. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Type X: Vertical surfaces, unless otherwise indicated.
2. Abuse-Resistant Type: As indicated on Drawings.
3. Moisture- and Mold-Resistant Type: As indicated on Drawings.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.

3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840, at maximum 30 o.c. spacing and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners, unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile.
3. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.

E. Glass-Mat Faced Panels: Finish according to manufacturer's written instructions.

3.6 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093000 - TILING

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. This Section includes the following:

1. Interior base and floor tile.
2. Uncoupling/waterproofing membrane.

1.3 PERFORMANCE REQUIREMENTS

A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:

1. Level Surfaces: Minimum 0.6.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

C. Samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required.

D. Product Certificates: For each type of product, signed by product manufacturer.

E. Material Test Reports: For each tile-setting and -grouting product.

1.5 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain all tile of same type from one source or producer.

1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Store liquid latexes in unopened containers and protected from freezing.

E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:

1. As selected by Architect from manufacturer's full range.

2.2 TILE PRODUCTS

A. Glazed Porcelain Floor Tile:

1. Mosa Quartz Product #4104 RQ
2. Composition: Porcelain.
3. Face Sizes:
   a. Floor Tile: module size 12 by 24 inches.

4. Tile Color and Pattern: 4104 RQ
5. Grout: Spectralock Pro, Color: Raven 45.
6. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

    a. Base Tile: module size 4 by 24 inches.

2.3 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes. Thresholds to be stainless steel and must meet ADA and ANSI accessibility requirements.

2.4 UNCOUPLING/WATERPROOF MEMBRANE MATERIALS

A. Basis-of-Design Manufacturer: Provide uncoupling/waterproofing system materials by the following:

1. Schluter Systems L.P., 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841. Tel: (800) 472-4588. Fax (800) 477-9783. E-mail: info@schluter.com. Internet: www.schluter.com.

B. Uncoupling / Waterproofing Membrane for Floors: Schluter-DITRA, Corrugated polyethylene matting with 3 mm (1/8 inch) high dovetail-shaped ribs and a polypropylene-fiber support webbing laminated to the underside to provide a mechanical bond to the substrate, meeting ANSI A118.10 and meeting TCA definition for Uncoupling Membrane.

C. Tile Backing Panels at Walls: Fiberglass mat gypsum board as specified in Division 09 Section “Gypsum Board”.

2.5 SETTING MATERIALS

A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.1A.

B. Dry-Set Portland Cement Mortar (Thin Set): ANSI A118.1.

C. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

2.6 GROUT MATERIALS

A. Polymer-Modified Tile Grout: ANSI A118.7, color as selected from manufacturer’s full range.

B. Water-Cleanable Epoxy Grout: ANSI A118.3.
1. Basis-of-Design Manufacturer: Provide epoxy grout materials by the following:
    a. Laticrete, Laticrete Park, North Bethany, CT 06524-3423 USA
        1) Spectralock Pro Grout, Color: Raven 45

2.7 MISCELLANEOUS MATERIALS

A. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.8 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

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

3.2 PREPARATION

A. At exterior deck, remove existing quarry tile, prepare for reinstallation and store until deck is ready for re-installation.

B. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 TILE INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series

"Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:

    a. Tile floors in wet areas.
    b. Tile floors composed of tiles 8 by 8 inches or larger.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

E. Joint Widths: As directed by Architect for specific tile type.

F. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

G. Thresholds:

1. Fill joints between thresholds and adjoining tile set on crack isolation membrane with elastomeric sealant.

3.4 UNCOUPLING/WATERPROOFING MEMBRANE INSTALLATION

A. Install uncoupling/waterproof membrane to comply with manufacturer's written instructions to produce membrane of uniform thickness bonded securely to substrate.

B. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 TILE BASE INSTALLATION

A. Install cementitious backer units and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.6 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove latex-portland cement grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile base and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.7 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Tile Installation F122: Thin-set mortar on uncoupling membrane; TCNA F122.

a. Tile Type: Porcelain tile.
b. Thin-Set Mortar for Cured-Bed Method: Latex- portland cement mortar.
c. Grout: Water-cleanable epoxy grout.

B. Interior Base Installations:

1. Tile Installation W245: Thin-set mortar on gypsum board; TCNA W243.

a. Tile Type: Porcelain tile.
b. Thin-Set Mortar: Latex- portland cement mortar.
c. Grout: Water-cleanable epoxy grout.

END OF SECTION 093000

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 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 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), exterior and interior of new and renovated restrooms, all areas disturbed by construction, new HVAC stand: Scope of work includes the following:
1. Preparing substrates.
2. Plain painting of exterior historic and non-historic surfaces.
3. Plain painting of interior surfaces.
4. Plain painting of exterior wood.
5. Plain painting of metal.

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 and metal 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):
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 METAL PRIMER & PAINT (STAINLESS STEEL)

A. Pretreatment
1. As specified by manufacturer.

B. Exterior Metal Paint (2 coats)

1. Industrial Grade Metal Paint Product Manufactured by PPG suitable for stainless steel
2. Or Approved Equal.

2.7 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. Benjamin Moore Aura Exterior Paint, sheen to match existing (Exterior Walls- Vertical Boards)
   3. Or an Approved Equal

2.8 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 (528) (Walls)
   2. Benjamin Moore Aura Interior Paint Satin (526) (Ceilings)
   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 (five years of experience in matching and touching up existing painting). Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers. Projects must include installation of mineral silicate paint/coating systems.

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

SECTION 102113 - TOILET COMPARTMENTS

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. This Section includes phenolic core overhead braced toilet enclosure units.

1.3 SUBMITTALS

A. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Show locations of cutouts for compartment-mounted toilet accessories.

B. Samples for Verification: Of each type of color and finish required for units, prepared on 6-inch-square Samples of same thickness and material indicated for Work.

C. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Comply with requirements in CID-A-A-60003, "Partitions, Toilets, Complete."

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 PROJECT CONDITIONS

A. Manufacturer’s Warranty: Manufacturer agrees to replace phenolic-core toilet compartments that fail in materials or workmanship within the specified warranty period.

1. Material Warranty Period: 25 years from the date of Substantial Completion.
2. Installation Warranty Period: 1 year from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide **Recycled Plastic HDPE Toilet Partitions by COLUMBIA PARTITIONS®, a Division of PSiSC** or comparable product by one of the following:

1. Bradley Corporation.
2. Comtec Industries.
3. Santana Products, Inc.

2.2 ENCLOSURE UNITS

A. Door, Panel, and Pilaster Construction: Solid, phenolic panel material, not less than 1 inch thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.

1. Color and Pattern: 1097 Citadel, Matte Finish with through color matching edge color.

B. Pilaster Shoes: Stainless steel, ASTM A 666, Type 302 or 304, 3 inches high.

C. Full-Height (Continuous) Brackets: Manufacturer's standard design.

2.3 ACCESSORIES

A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.

1. Material: Stainless steel. (Castings to meet ASTM A743/A743M)

B. Overhead Bracing: Manufacturer's standard continuous, stainless steel rail and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use hot-dip galvanized or other rust-resistant, protective-coated steel.

2.4 FABRICATION

A. Overhead-Braced-and-Floor-Anchored Compartments: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, fasteners, and anchors at pilasters to suit floor conditions. Make provisions for setting and securing continuous head rail at top of each pilaster. Provide shoes at pilasters to conceal supports and leveling mechanism.

B. Doors: Unless otherwise indicated, provide 24-inch- wide in-swinging doors for standard toilet compartments and 36-inch- wide out-swinging doors with a minimum 32-inch- wide clear opening for compartments indicated to be accessible to people with disabilities.

1. Continuous Hinges: Continuous, full-height stainless steel hinge that swings to a closed position.
2. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be accessible to people with disabilities.
3. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories.
4. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.
5. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with accessibility requirements of authorities having jurisdiction. Provide units on both sides of doors at compartments indicated to be accessible to people with disabilities.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

1. Maximum Clearances:

a. Pilasters and Panels: 1/2 inch.
b. Panels and Walls: 1 inch.

B. Overhead-Braced-and-Floor-Anchored Compartments: Secure pilasters to floor and level, plumb, and tighten. Secure continuous head rail to each pilaster with not less than 2 fasteners. Hang doors and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

C. Secure toilet partitions with vandal resistant stainless-steel machine screws with expansion anchors at masonry and tile walls, with toggle bolts at hollow walls, and expansion anchors at other walls. Provide stainless steel or polymer resin base trim to conceal floor anchorage and leveling devices

3.2 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 102113

SECTION 102800 – TOILET, BATH AND LAUNDRY ACCESSORIES

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. This Section includes the following:
   1. Bathroom accessories.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:
   1. Construction details and dimensions.
   2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
   3. Material and finish descriptions.
   4. Features that will be included for Project.
   5. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

1.5 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.6 WARRANTY

A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.

B. Brass: ASTM B 19 flat products; ASTM B 16, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.

C. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of stainless steel where concealed.

D. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.2 BATHROOM ACCESSORIES

A. Provide all accessories required for a complete installation. Basis-of-Design Products: See toilet accessories schedule.

2.3 BATHROOM SIGNAGE

A. Signage: Provide graphic braille signs at all new and renovated restroom doors. Signs by Air Delights Commercial Restroom Products.

2.4 UNDERLAVATORY GUARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Plumberex Specialty Products, Inc.
   2. TCI Products.
   3. Truebro, Inc. – 103 EZ LAV GUARD (Basis of Design).

B. Underlavatory Guard:
   1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
   2. Material and Finish: Antimicrobial, molded plastic, white.

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

3.3 TOILET ACCESSORY SCHEDULE

TOILET ACCESSORY SCHEDULE				
TAG	DESCRIPTION	MANUF.	MODEL NO.	NOTES
BCS	BABY CHANGING STATION	KOALA KARE	KB-200	HORIZONTAL, SURFACE MOUNTED, GRAY
DRY	HAND DRYER	XLERATOR	XL-BW	SURFACE MOUNTED, WHITE
GB1	36" GRAB BAR	PSISC	GB-171	1 1/2" SNAP ON FLANGE MOUNTING, SATIN FINISH
GB2	42" GRAB BAR	PSISC	GB-181	1 1/2" SNAP ON FLANGE MOUNTING, SATIN FINISH
GB3	18" GRAB BAR	PSISC	GB-231	1 1/2" SNAP ON FLANGE MOUNTING, SATIN FINISH
MR1	COUNTERTOP MIRROR	PSISC	MR-341	CHANNEL FRAME MIRROR 18" W X 36" H
ND	NAPKIN DISPOSAL	PSISC	ND-111	SURFACE MOUNT, LIFT DOOR
SD	SOAP DISPENSER	PSISC	SD-111	VERTICAL, SURFACE MOUNTED
TCD	TOILET SEAT COVER DISPENSER	PSISC	TC-111	SURFACE MOUNTED
TD	TISSUE DISPENSER	PSISC	TC-171	SURFACE MOUNTED
TC1	TRASH CAN	ULINE	H-4454	STAINLESS STEEL, 16 GALLON HALF ROUND
TC2	TRASH CAN	ULINE	H-3621	STAINLESS STEEL, 13 GALLON SLIM

3.4 SIGNAGE SCHEDULE

Description	Air Delight Accessories Number
Men’s Accessible Restroom Signage (stainless steel)	EMMS01
Women’s Accessible Restroom Signage (stainless steel)	EMMS03
Men’s Baby Changing Station Signage (stainless steel)	EMMS37

Women’s Accessible Signage (stainless steel)	EMMS37
Men’s Restroom Signage (stainless steel)	EMMS02
Women’s Restroom Signage (stainless steel)	EMMS04

END OF SECTION 102800

Beaufort Arsenal Window Assessment Beaufort, SC

Prepared for:
Linda Roper
Director of Downtown Operations & Community Services
1901 Boundary Street
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Prepared By:
Meadors, Inc.
PO Box 21758
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Date: 11.29.2017

ATTENTION:

Linda Roper
USC Project Management
Director of Downtown Operations & Community Services
1901 Boundary Street
Beaufort, SC 29902

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

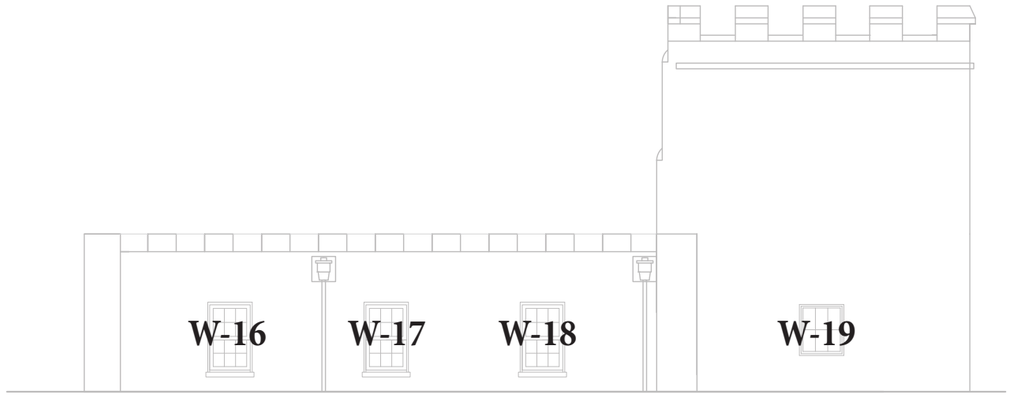
South Elevation

East Elevation
Interior Courtyard

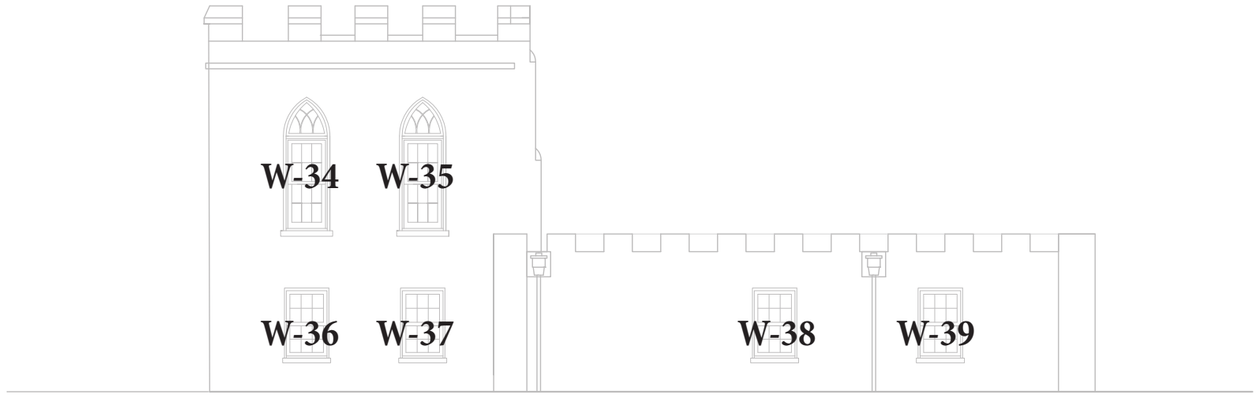
West Elevation
Interior Courtyard

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.

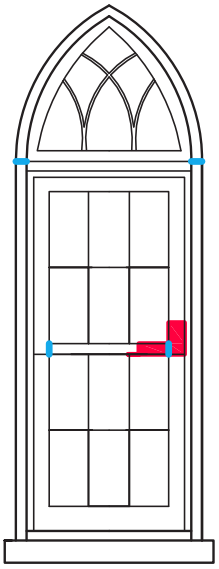


Figure 10: Overview of window #W-01. This is an historic double-hung sash window.

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.

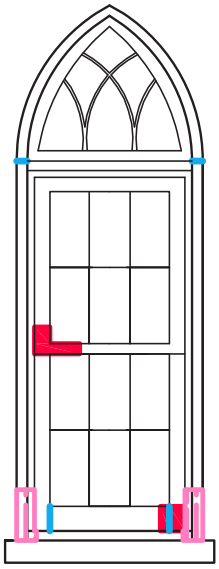


Figure 14: Overview of window #W-02. This is an historic double-hung sash window.

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.

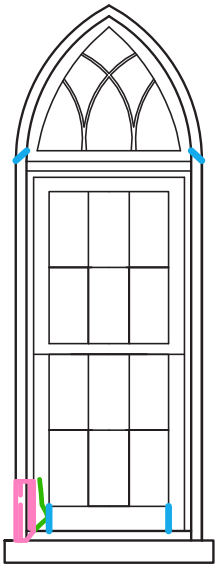


Figure 18: Overview of window #W-03. This is an historic double-hung sash window.

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.

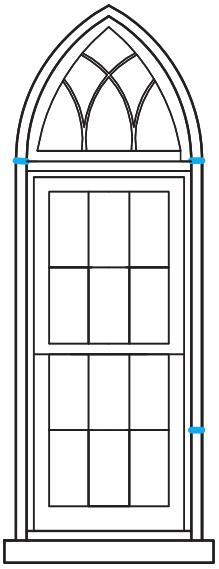


Figure 22: Overview of window #W-04. This is an historic double-hung sash window.

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.

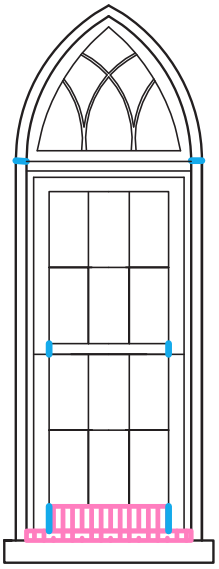
Figure 25: Detail of interior conditions.

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.

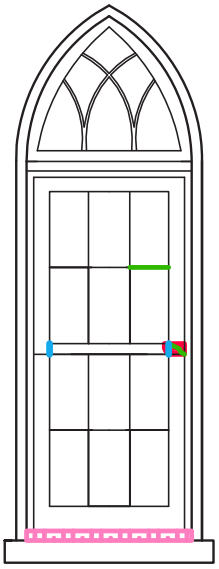


Figure 30: Overview of window #W-06. This is an historic double-hung sash window.

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.

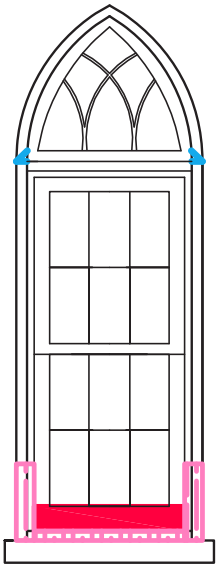


Figure 34: Overview of window #W-07. This is an historic double-hung sash window.

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.

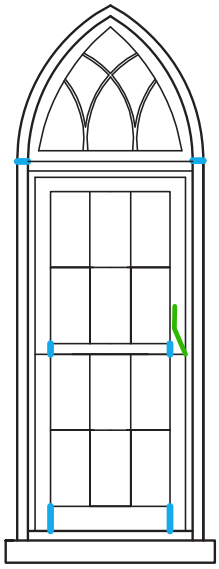


Figure 38: Overview of window #W-08. This is an historic double-hung sash window.

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.

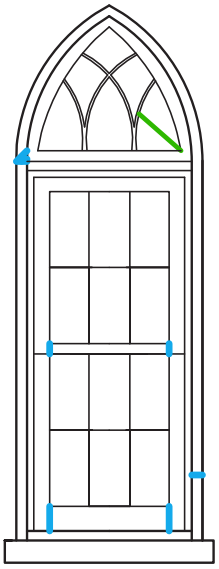


Figure 42: Overview of window #W-09. This is an historic double-hung sash window.

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.

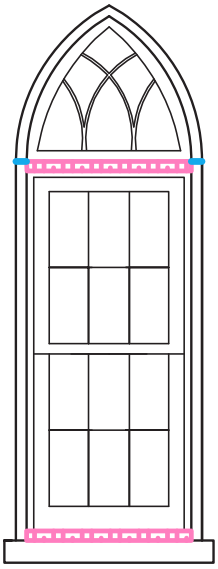


Figure 46: Overview of window #W-10. This is an historic double-hung sash window.

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.

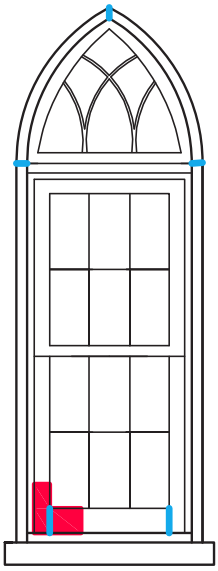


Figure 50: Overview of window #W-11. This is an historic double-hung sash window.

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.

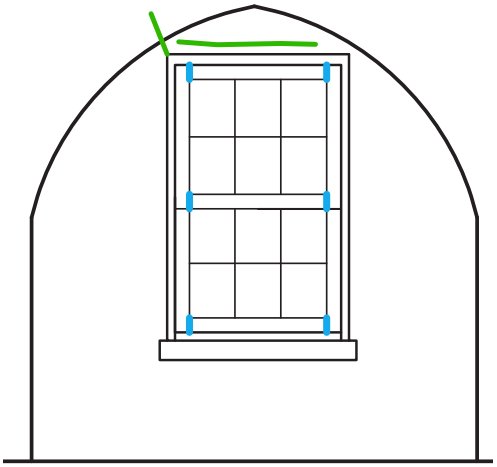


Figure 54: Overview of window #W-12. This is an historic double-hung sash window.

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.

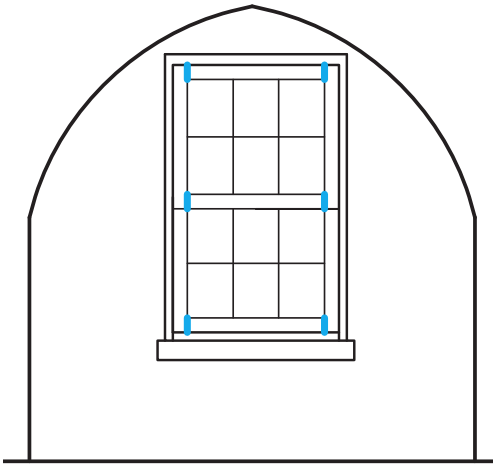


Figure 58: Overview of window #W-13. This is an historic double-hung sash window.

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.

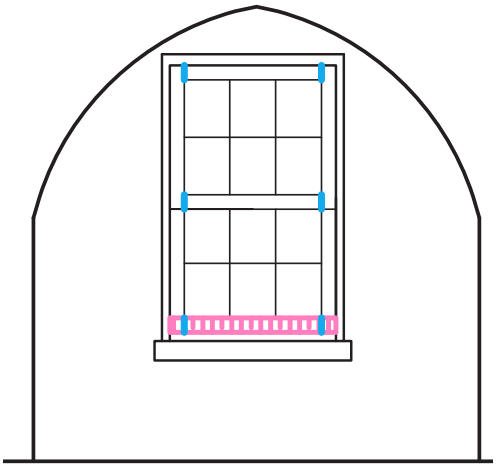


Figure 62: Overview of window #W-14. This is an historic double-hung sash window.

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.

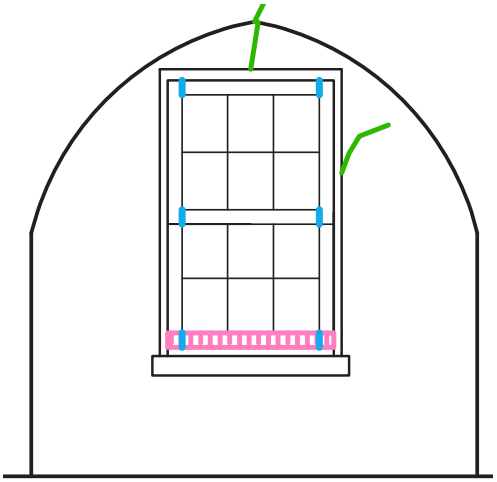


Figure 66: Overview of window #W-15. This is an historic double-hung sash window.

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.

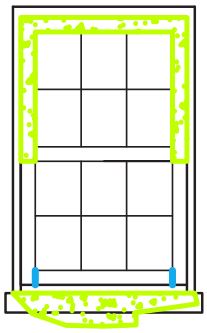


Figure 70: Overview of window #W-16. This is an historic double-hung sash window.

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.

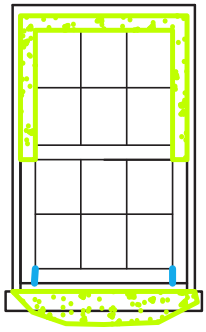


Figure 74: Overview of window #W-17. This is an historic double-hung sash window.

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.

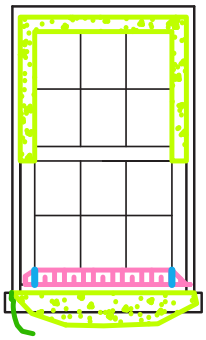


Figure 78: Overview of window #W-18. This is an historic double-hung sash window.

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.

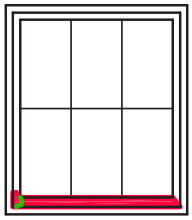


Figure 82: Overview of window #W-19. This is an historic casement window.

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.

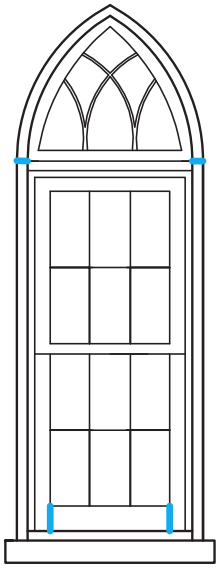


Figure 86: Overview of window #W-20. This is an historic double-hung sash window.

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.

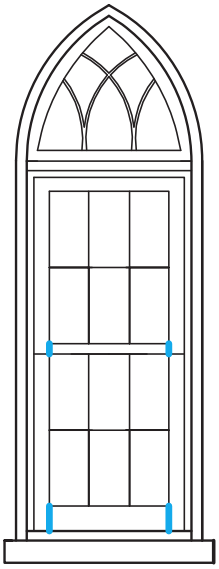


Figure 90: Overview of window #W-21. This is an historic double-hung sash window.

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.

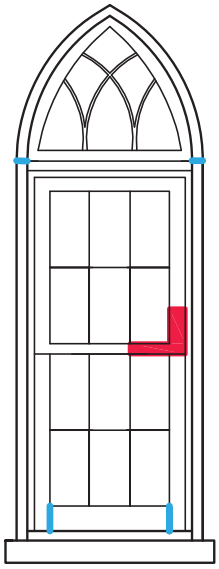


Figure 94: Overview of window #W-22. This is an historic double-hung sash window.

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.

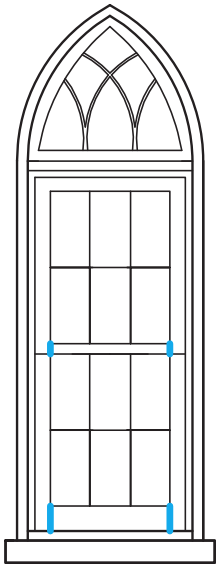


Figure 98: Overview of window #W-23. This is an historic double-hung sash window.

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.

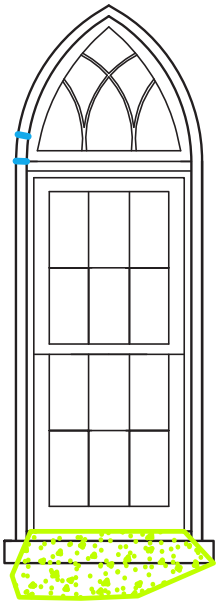


Figure 102: Overview of window #W-24. This is an historic double-hung sash window.

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.

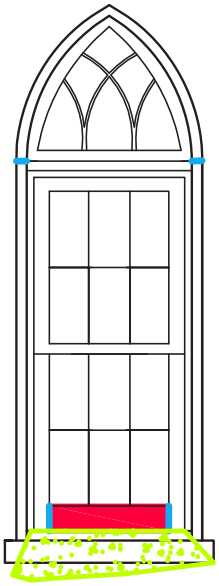


Figure 106: Overview of window #W-25. This is an historic double-hung sash window.

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.

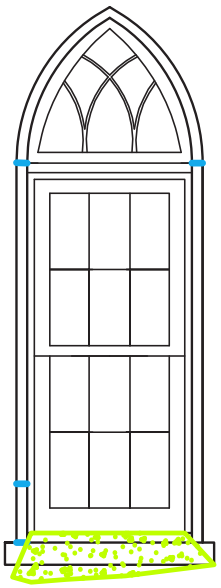


Figure 110: Overview of window #W-26. This is an historic double-hung sash window.

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.

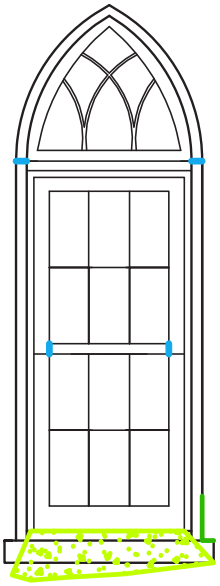


Figure 114: Overview of window #W-27. This is an historic double-hung sash window.

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.

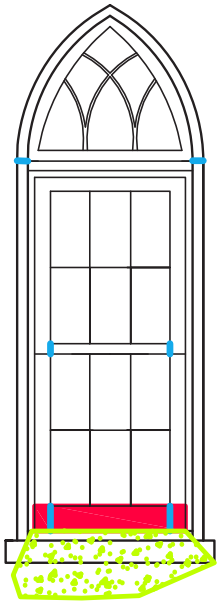


Figure 118: Overview of window #W-28. This is an historic double-hung sash window.

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.

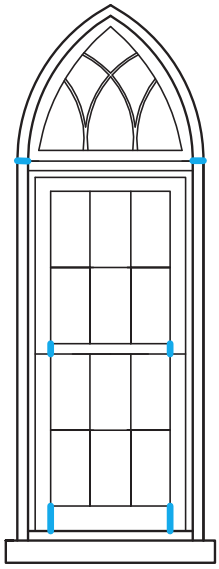


Figure 122: Overview of window #W-29. This is an historic double-hung sash window.

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.

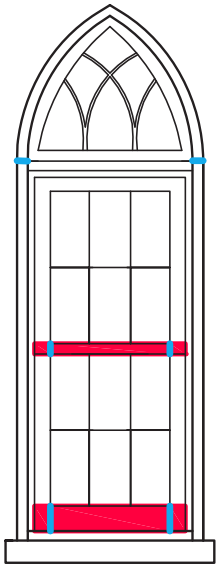


Figure 126: Overview of window #W-30. This is an historic double-hung sash window.

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.

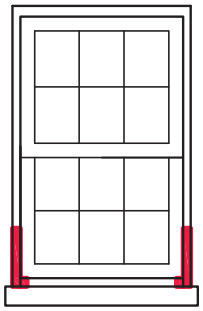


Figure 130: Overview of window #W-31. This is an historic double-hung sash window.

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.

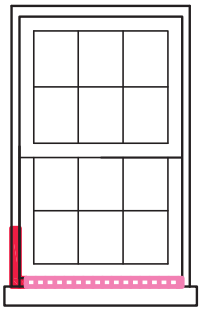


Figure 133: Overview of window #W-32. This is an historic double-hung sash window.

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.

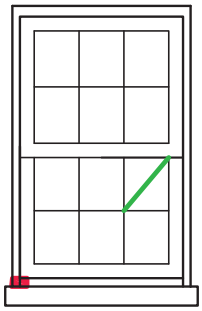


Figure 137: Overview of window #W-33. This is an historic double-hung sash window.

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.

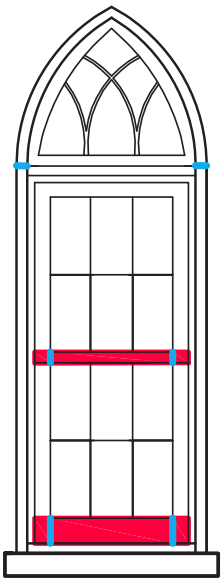


Figure 141: Overview of window #W-34. This is an historic double-hung sash window.

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.

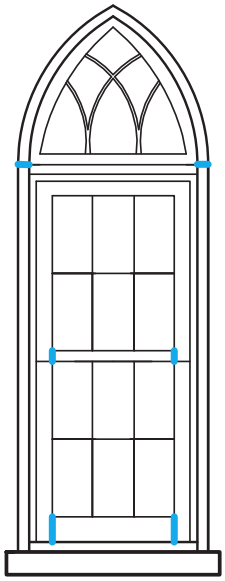


Figure 145: Overview of window #W-35. This is an historic double-hung sash window.

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.

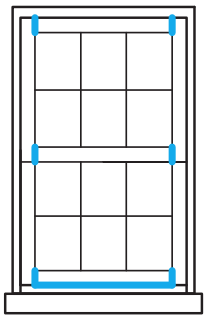


Figure 149: Overview of window #W-36. This is an historic double-hung sash window.

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.

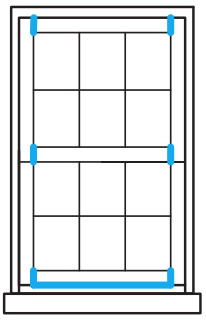


Figure 153: Overview of window #W-36. This is an historic double-hung sash window.

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.

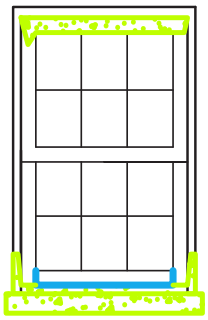


Figure 157: Overview of window #W-36. This is an historic double-hung sash window.

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.

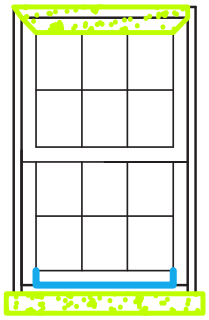


Figure 161: Overview of window #W-36. This is an historic double-hung sash window.

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.