CAMP NELSON NATIONAL MONUMENT
NICHOLASVILLE, KENTUCKY

DESIGN AND CONSTRUCTION DOCUMENTS
FOR FEE MEMORIAL CHURCH
PMIS 323333B
Drawing No: 532/190070

PROJECT SPECIFICATIONS

NATIONAL PARK SERVICE
6.28.2024

TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

Section 01 10 00 – Division 01 Short Form General Requirements
Section 01 32 33 – Photo Documentation
Section 01 35 13.22 – Archeological Protection
Section 01 35 91 – Historic Preservation Treatment Procedures
Section 01 73 29 – Cutting and Patching
Section 01 74 19 – Construction Waste Management and Disposal

DIVISION 2 - BASIC REQUIREMENTS
Section 02 41 19 – Selective Disassembly, Salvage and Protection

DIVISION 3 - CONCRETE
Section 03 30 00 – Cast-in-Place Concrete

DIVISION 4 – MASONRY
Section 04 26 13 - Masonry Veneer

DIVISION 6 - WOOD AND PLASTICS
Section 06 01 20 – Wood Restoration
Section 06 10 00 – Rough Carpentry
Section 06 16 00 – Sheathing
Section 06 40 13 – Exterior Architectural Woodwork

DIVISION 7 - THERMAL AND MOISTURE PROTECTION
Section 07 31 29 – Wood Shingles
Section 07 62 00 – Sheet Metal Flashing and Trim
Section 07 62 13 – Gutters and Downspouts
Section 07 92 00 – Joint Sealants

DIVISION 8 - DOORS AND WINDOWS
Section 08 01 52 – Wood Window Restoration (includes Bid Option 1)
Section 08 01 53 – Wood Doors
Section 08 16 13 – Fiberglass Doors
Section 08 51 60 –Window Protection
Section 08 71 00 – Door Hardware

DIVISION 9 - FINISHES
Section 09 91 13 – Painting

DIVISION 26 – ELECTRICAL
Section 26 00 00 – Common Work Results for Electrical

DIVISION 31 - EARTHWORK
Section 31 10 00 – Site Clearing
Section 31 50 00 – Excavation Support and Protection

APPENDICES
A. LBP Report
B. Asbestos Report

SECTION 01 10 00

DIVISION 1 SHORT FORM GENERAL REQUIREMENTS

PART 1 – GENERAL

ITEM 1 - DESCRIPTION OF WORK

1.1 Background: Fee Memorial Church was built in 1912 and is eligible for listing in the National Register of Historic Places with state-level significance in the areas of Ethnic Heritage. The goal of the project is to address specific concerns regarding the concrete foundation and wood frame superstructure, management of rainwater runoff from the roof, the lack of adequate shear capacity in the walls, the need for reinforcement of the cupola, and insect damage to wood structural members.

1.2 Work Covered by the Contract Documents:

A. Project Location: 316 Church Street, Nicholasville, Kentucky 40356, Jessamine County.

B. Work consists of: This project seeks to address the issues outlined in the Fee Memorial Church Historic Structures Report while also restoring the exterior of the building to its 1912-1924 appearance.

1. Base Bid:
   - a. Disconnect and reconnect services
   - b. Building Lifting
   - c. Demolition of concrete foundation and stairs
   - d. New concrete foundation and stairs
   - e. Structural reinforcement of walls and roof and repair damaged wood structural members.
   - f. Reinforcement of the cupola and repair damaged wood structural members.
   - g. Wood Siding: Repairs and new wood siding
   - h. New brick chimneys (non-operable)
   - i. Wood Trim: Repairs and new wood trim
   - j. New eaves and fascia
   - k. New roof, gutters and downspouts
   - l. New exterior doors and repairs to existing interior door
   - m. Protection of windows
   - n Paint structure
2. Options:

a. Window Repairs

C. All work will be performed under a single contract.

D. Period of performance: Work shall be completed within 180 calendar days of the start date provided on the Notice to Proceed.

1. Clarification: The Notice to Proceed will be issued with a period of performance that is all inclusive of supply lead times, material deliveries, decommissioning, installation, anticipated average weather days for location, final commissioning, and acceptance of completed work. The contractor will be expected to provide a project schedule with adequate critical path details to ensure all work is completed within the stated calendar days from issuance of the Notice to Proceed. If weather impacts project beyond typical average weather patterns, contractor shall provide documentation in request for additional days.

1.3 Existing Condition Protections:

A. Preservation of Historical and Archeological Fabric:

1. The Historic and Archeological Data Preservation Act of 1974, provides for the preservation of historical and archeological data that might otherwise be lost as the result of alterations to the terrain caused by a federal or federally licensed activity or program.
2. If, in connection with operations under this contract, the Contractor, subcontractors, or employees of any of them, discovers, encounters or becomes aware of any possible historical or archeological data, objects or sites of cultural value on the project area, such as historical ruins, graves or grave markers, fossils, or artifacts, the Contractor shall immediately suspend all operations in the vicinity of the discovery and notify the CO immediately, when safe to do so, and follow up in writing within 2 days, giving the location and nature of the findings. No objects of cultural resource value may be removed. CO will contact other entities as required.
3. Where appropriate by reason of discovery, the CO may order delays in the time of performance and/or changes in the work. If such delays and/or changes are ordered, the time of performance and contract price shall be adjusted in accordance with Changes clause.
4. The Contractor will be responsible for protecting the cultural resources within and adjacent to the project area from damage. In addition, the Contractor will be liable for all damage to the cultural resources caused by their actions or the actions of their agents or representatives. The Contractor shall immediately notify the CO / COR if any damage occurs to any cultural resource and immediately suspend work in the area in which damage has occurred until authorized to proceed.
5. The Contractor agrees to include this language within all subcontracts.

B. The structure involved in the work of this Contract is a historic structure eligible for listing to the National Register of Historic Places. Every precaution shall be taken by the Contractor to prevent damage to existing historical materials, structural components of the building, and to the surrounding area. Should any damage be incurred as a result of the Contractor's operations at the site, it shall be repaired, or the damaged materials replaced in kind by the Contractor to the satisfaction of the CO at no additional expense to the Government.

1. Should Contractor's operations or employees uncover or find any historic artifacts or archeological remains not specifically noted within the contract, the Contractor shall suspend operations at the site of discovery; notify the CO immediately of the findings and continue operations in other areas outside a 50 foot radius of discovery.

C. Protection of Landscaping and Surrounding Structures: All ground disturbance at this project shall have oversite by a Park Service provided Archeologist. Coordinate schedules with a minimum of two business days for notification. The Contractor shall take all necessary measures to provide protection for all trees, fencing, walks and other landscape features and surrounding structures near the work site as noted with the contract. Any such surrounding features damaged, scarred or broken as a result of the Contractor's operations at the site outside of agreed upon documented extents, shall be treated, repaired or replaced in kind to the satisfaction of the CO at no additional expense to the Government.

ITEM 2 – PROTECTING EXISTING UTILITIES

2.1 Protecting Existing Utilities: Notify CO/COR and utility companies as required to request location services prior to and to coordinate any excavation/digging operations, and/or for demolition if within Scope of Work.

2.2 Contractor shall be responsible for locating and preventing damage to known utilities on site or indoors. If contractor damage occurs, alert CO/COR as soon as safely possible, and repair utility at no additional expense to the Government. If damage occurs to an unknown utility, contact CO and COR as soon as safely possible.

2.3 Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Government or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated below:

A. Notify CO and COR not less than two business days in advance of proposed utility interruptions.

B. Hours for Utility Shutdowns: Shutdowns shall not exceed 2 to 3 hours. Temporary provisions will be needed by the Contractor for periods longer than stated allowance or if required for critical systems as determined by COR.

ITEM 3 - CONTRACTOR'S USE OF PREMISES

3.1 Conduct of Operations: At all times the Contractor shall conduct his operations in conformance with the rules and regulations promulgated by the Secretary of the Interior for the National Park Service, and applicable Park (Camp Nelson National Monument). rules and regulations prescribed by the Park Superintendent.

A. Communications: Contractor shall provide the CO and COR with methods of communications including land and/or cell phone numbers (note some areas of work have limited service coverage), email and in case of emergency 24-hour contact options for duration of time operations.

B. No signs or advertisements (except those specified herein and as required for safety) shall be displayed on the construction site or within the park unless approved by the CO.

C. Smoking is not permitted within any Federal building or within 25 feet of entrances, operable windows, or outdoor air intakes.

D. Public Use of Site: Contractor shall at all times conduct operations to ensure the least inconvenience to the public.

3.2 On-site work hours: Work shall be generally performed during normal business working hours of 7 a.m. to 4 p.m., Monday through Friday, except when otherwise indicated.

A. Work on Saturdays, Sundays, Federal holidays, early morning, or at night may not be performed without prior consent from the CO and COR. Submit requests for work outside of the stated normal business hours to the CO and COR for approval at least 48 hours in advance of the work.

The following Federal holidays are observed by the National Park Service:
New Year Day
Martin Luther King, Jr's Birthday
Washington's Birthday
Memorial Day
Juneteenth National Independence Day
Independence Day
Labor Day
Columbus Day
Veterans Day
Thanksgiving Day
Christmas Day

B. Note: Any of the above holidays falling on a Saturday will be observed on the preceding Friday; holidays falling on Sunday will be observed on the following Monday. The specific

day that each holiday is recognized for each year can be found at the following site: Federal Holidays (opm.gov).

3.3 Contractor Use of Site:

A. General: Contractor shall have limited use of the site for construction operations. Limit use of premises to construction area as shown on site plan on the Cover Sheet and G005. Do not disturb portions of Project Site beyond areas in which the Work is indicated.

B. Driveways and Entrances: Keep driveways, access roads, and entrances serving premises clear and available to the Public and Government, Government's employees, emergency vehicles and public at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize use of driveways and entrances.

C. Do Not disturb site outside of noted disturbance area, including earthwork and clearing of vegetation, to:

1. 40 feet beyond building perimeter
2. 10 feet beyond surface walkways, patios, surface parking, and utilities less than 12 inches in diameter
3. 15 feet beyond primary roadway curbs and main utility branch trenches
4. 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, storm water detention facilities, and fields) that require additional staging areas to limit compaction in the constructed area.

Contractor shall provide appropriate matts for equipment on turf areas to reduce soil compaction. Contractor shall remediate soil compaction as directed to do so by the CO/COR.

D. Utilities

1. General: Cost or use charges for temporary facilities shall be included in the Contract Sum as required.

2. Water Service: There ***is not*** water available on site.

3. Electric Power Service: Electric power from existing system ***is*** available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations without any additional permit costs. Power may or may not meet your construction power tool requirements, provide generators if questionable. Use power in a resourceful manner and avoid excess power waste.

4. Waste Operation:

a. Toilets: Contractor must provide toilets for contractor personnel, sufficiently lighted and ventilated toilet facilities in weatherproof, sight proof, handicap accessible (if required), sturdy enclosures with privacy locks. Coordinate with COR for approved location if not shown on attached site plan.

b. Waste Removal / Recycling: Contractor is responsible for removing all waste created by the project. Contractor shall recycle to the highest degree possible and empty dumpsters as necessary to avoid debris on site. Locate as shown on site plan or coordinated with COR.

E. Security and Protection facilities:

1. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with state and federal environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects and including disturbance, movement or damage to archaeological areas.

   a. Provide temporary barriers to protect adjacent archaeological areas, if required by the CO/COR.

2. Cleaning of Equipment: The Contractor shall ensure that prior to moving on to the Project Area, all equipment, is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds. Ensure that all equipment has been pressure washed and is free of exotic species prior to start-up of operations and moving of equipment to Project Area. Equipment shall be considered free of soil, seeds, and other debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools are not required.

3. Tree and Plant Protection: Provide Tree Protection fence at drip line of trees impacted in construction area. Coordinate with COR. Restore damaged areas to original condition, repairing or replacing damaged trees and plants, at no additional expense to the Government.

   a. Provide temporary barriers to protect existing trees and plants and root zones.
   b. Do not remove, injure, or destroy trees or other plants without prior approval. Consult with COR and remove agreed-on roots and branches that interfere with construction.
   c. Do not fasten ropes, cables, or guys to trees.
   d. Carefully supervise excavating, grading, filling, and other construction operations near trees to prevent damage.
   e. Do not use pesticides unless coordinated with CO/COR.

4. Pest Control: Follow best practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at project completion. Perform control operations lawfully, using environmentally safe materials. Pesticides may not be used by Contractor unless previously coordinated with CO or COR.

5. Temporary Enclosures: Provide temporary enclosures such as snow fence as required for protection of construction in progress and completed, from access by visitors or staff, other construction operations, and similar activities.

6. Site Enclosure Fence: Before construction operations begin, furnish, and install portable six (6) foot tall chain link fencing in a manner that will prevent people and animals from easily entering site and or storage areas except by entrance gates.

a. Extent of Fence: As required to enclose portion determined sufficient to accommodate construction operations and storage.
b. Locate vehicular gates to avoid interference with traffic on public thoroughfares.
c. Locate pedestrian entrance gates as required to provide controlled personnel entry.
d. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide CO and/or COR with one set of keys or utilize double lock with NPS lock.

7. Hot Work Permit: N/A

3.4 Storage - Staging Areas:

A. Confine Storage of materials and equipment to the project staging area noted on the plans/aerial. Specific storage units shall be provided by the contractor and exact location within staging area may be discussed at the preconstruction briefing. All storage units provided by the contractor shall be in a clean and acceptable condition to the COR. Security of the materials and equipment on site is the Contractor's responsibility. See logistics plans provided in the drawing set.

3.5 Preservation of Natural Features: N/A.

3.6 Hauling Restrictions: Contractor shall verify and be responsible for the path accessing the site and obtaining / maintaining all local, state and federal permits/licenses associated with hauling/road requirements and dumping of materials associated with the project.

3.7 Housekeeping:

A. Keep project neat, orderly, and in a safe condition at all times.

1. Dispose of waste materials and recycling legally outside the park. The contractor shall not use park dumpsters

2. Address Recycling: Government goal is to salvage and recycle as much nonhazardous construction waste as possible. Use sustainable methods to extent possible during this project, recycling material as is probable with local means. Maintain accurate documentary records for submittal of all recycled materials used including fly ash and slag cement.

3.8 Occupancy Requirements for Buildings:

A. Existing Buildings Unoccupied:

1. Contractor shall be responsible for and protect the entire facility and construction site from notice to proceed through final acceptance.

2. Government Occupancy of Completed Areas of Construction: Government reserves the right to occupy and to place and install equipment in completed areas of building, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the entire project.

    a. CO will prepare a Beneficial Occupancy letter for each specific portion of the Work to be occupied before Government acceptance.
    b. Contractor to obtain a Certificate of Occupancy from the NPS before Government occupancy.
    c. Before partial Government occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Government will operate and maintain mechanical and electrical systems serving occupied portions of building.
    d. On occupancy, Government will assume responsibility for maintenance and custodial service for occupied portions of building.

3.9 Photo Documentation:

A. Contractor must provide existing condition, progress, and completion photos. All photos shall be in focus, show maximum range of depth of field for general photo and then close up detail photo as needed. Shall be in JPEG digital form and submitted preferably electronically within 7 days from time taken or as approved by COR. Contractor to coordinate with Park for approval of transfer method prior to submittal.

B. Existing Condition Images:

1. Before starting construction, take color, dated, digital images of project site and adjacent property/roads/etc. that may be impacted by construction activity/traffic. Include existing items to remain or be salvaged from different vantage points and with context for location identification.

C. Construction Progress Images:

1. Document all sub-surface work/ trenches etc. prior to backfill with photos covering enough overall field view to show location and then zoom in for details. (Locations and dimensions shall also be noted on as built drawing set.)
2. Maintain organized index for photos with date, description, etc.
3. Additional images as needed when questions or emergency situations occur. Submit within 24 hours.

D. Completion Images:

1. Document all completed work within scope of work.

2. Maintain organized index for photos with date, description, etc..
3. Additional images as needed when questions or emergency situations occur. Submit within 24 hours.

3.10 Fire and Life Safety:

D. As a minimum, conduct one weekly 15 minute "toolbox" safety meetings. These meetings shall be conducted by a foreman or supervisor and attended by all construction personnel at the worksite. Topics need to coincide with work scheduled for the following week. Document and submit meeting minutes to the CO and COR within one day after the meeting and document the meetings on the daily reports.

E. Comply with the requirements of NFPA 241 (Standard for Safeguarding Construction, Alteration, and Demolition Operations). Take all necessary precautions to prevent fire during construction. Provide adequate ventilation during use of volatile or noxious substances.

F. Store and handle hazardous materials in accordance with manufacturers and OSHA 29CFR1926 Subpart D requirements 1926 | Occupational Safety and Health Administration (osha.gov). Maintain readily available, on site, MSDS/Safety Data Sheets (SDS) for each chemical.

1. Immediately report all spills of hazardous materials to the CO, COR, and park.
2. Maintain a spill emergency response kit.
3. Train employees how to respond to a spill and use the emergency response kit.

3.11 Noise and Acoustics Management

A. Contractor shall not have personal radios or other media sources and they shall not be broadcast within NPS property.

B. Noise Control: Perform operations to minimize noise. Perform noise-producing work in less sensitive hours of the day or week as directed by the CO or COR.

C. Repetitive and/or intermittent, high-level noise: Permitted only during Daytime.

1. Do not exceed the following dB(A) limitations at 50 feet:

Sound Level in dB(A)	Time Duration of Impact Noise
70	More than 12 minutes in any hour
80	More than 3 minutes in any hour

2. Maximum permissible construction equipment noise levels at 50 feet:

EARTHMOVING	dB(A)	MATERIALS HANDLING	dB(A)
Compressors	75	Pneumatic Tools	80
Pumps	75	Saws	75
Generators	75	Vibrators	75

D. Ambient Noise:

1. Maximum noise levels (dB) for receiving noise area at property line shall be as follows:

   a. Residential receiving area :
      Daytime: 65 dB Nighttime: 45 dB

   b. Commercial/Industrial receiving area:
      Daytime: 67 dB Nighttime: 65 dB

ITEM 4 - COMMENCEMENT, PROSECUTION, AND COMPLETION

4.1 The Contractor shall commence work in accordance with the terms and conditions of the contract. Contractor shall coordinate and incorporate long lead and delivery time items within the schedule.

ITEM 5 - EXAMINATION OF THE SITE

5.1 All bidders are urged to visit the job site and examine existing conditions before submitting bids. Contractors will be accountable for understanding existing conditions. No cost changes for items visible during site visit will be allowed.

ITEM 6 - ABBREVIATIONS

6.1 The list of abbreviations, standards and organizations which may be used in/referred within the Construction Specifications or Special Provisions, may be found linked from the listed page below. On the home page, follow the link under **"Contracting and Procurement"** labeled **"NPS Reference Standards."** https://www.nps.gov/orgs/1671/do-business-with-us.htm

ITEM 7 - ACCIDENT PREVENTION

7.1 Description: The work of this section consists of establishing and implementing an effective accident prevention plan (APP) and providing a safe environment for all personnel and visitors.

7.2 Submittals:

A. APP: Submit a site-specific APP. The Plan shall be written to comply with OSHA and project requirements (a generic plan is not acceptable) including but not limited to the following:

1. Name and qualifications of responsible supervisor to carry out the plan.
2. First aid and rescue procedures.
3. Training, both initial and continuing.
4. Outline of each phase of the work, the hazards associated with each major phase, and the methods proposed to provide for property protection and safety of the public, National Park Service personnel, and Contractor's employees. Identify the work included under each phase, with a Job Hazard Analysis (JHA)/Job Safety Analysis (JSA), etc. A sample JHA template may be provided upon request.

5. Planning for possible emergency situations, such as cave-ins, earthquake, explosions, fires, floods, power outages, slides, and windstorms. Such planning shall take into consideration the nature of construction, site conditions, and degree of exposure of persons and property.
6. Contractor to identify nearest location of medical facility for emergencies.
7. Recognition that works will be performed in remote areas with limited communication or cell phone coverage if applicable.
8. Supplemental hazard specific plans may be required IAW 29 CFR 1926 or 1910.

B. Meeting and Inspection Reports: Safety Meetings: As a minimum, conduct 15 minute "toolbox" safety meetings. These meetings shall be conducted by a foreman and attended by all construction personnel at the worksite. Submit a report of safety meetings and inspections to CO and COR within one day after the meeting and document the meetings on the daily reports.

7.3 Qualification of Employees:

A. Ensure that employees are physically qualified to perform their assigned duties in a safe manner to include operators of vehicles and equipment. Provide operating instructions for all equipment.

B. Do not allow employees to work whose ability or alertness is impaired because of drugs, fatigue, illness, intoxication, or other conditions that may expose themselves or others to injury.

7.4 Accident Reporting: The Contractor shall report all accidents to the CO and COR as soon as safely possible and assist the CO and COR and other officials as required in the investigation of the accident.

7.5 First Aid Facilities: Provide access to facilities for the number of employees and appropriate to the hazards associated with the types of ongoing construction work at the site.

7.6 Emergency Instructions: Post telephone numbers and reporting instructions for ambulance, physician, hospital, fire department, and police in conspicuous locations at the work site.

7.7 Personal Protective Equipment (PPE): It is the Contractor's responsibility to require all those working on or visiting the site to wear necessary protective equipment at all times.

A. PPE must meet requirements of applicable ANSI standards. Selection shall conform to OSHA 29CFR 1926 Subpart E.

B. A hard hat use area shall be designated by the Contractor. The hard hat area shall be posted by the Contractor in a manner satisfactory to the CO.

C. All PPE will be serviceable at all times. At a minimum, maintain four sets of PPE including hard hats and all other APP required equipment.

7.8 Hazardous Materials: It shall be the responsibility of all operators and contractors, functioning within the park to properly cleanup, mitigate and remediate if necessary, all unauthorized discharges of hazardous materials or non-hazardous chemical and biological products released from fleet and/or other support vehicles or stationary sources. Response shall be consistent with guidelines established by federal, state, and local regulations, and as outlined within the operator's Safety or Hazardous Materials Business Plan.

A. If a spill, leak, or other release occurs, the operator shall as soon as possible, without impeding cleanup, notify the local 911 Emergency Response, COR and or the National Park Service Emergency Dispatch.

ITEM 8 - PRECONSTRUCTION CONFERENCE

8.1 If the CO decides to conduct a preconstruction conference, the successful offeror will be notified and will be required to attend. The CO's notification will include specific details regarding the date, time, and location of the conference, any need for attendance by subcontractors, and information regarding the items to be discussed. See Item 9.1C below.

ITEM 9 - SUBMITTALS

9.1 General Contracting Submittal Procedures:

A. General: Prepare and submit submittals required by individual Technical Specification Sections. Types of submittals are indicated in individual specific sections.

1. CM-16 Transmittal: All submittals shall be transmitted via email using National Park Service form CM-16. The form will be provided by the CO. No action will be taken on a submittal item unless accompanied by the CM-16 transmittal form. Submit completed CM-16 forms to the CO and the COR.

B. Submittal List: administrative required submittals are listed below in 9.1.C and does not include technical section submittal requirements included in each technical section.

C. Preconstruction Conference Submittal: Satisfactory evidence of liability insurance coverage and workman's compensation, and any applicable bonds, must be submitted within 10 calendar days of Notice of Award. The following items are to be submitted prior to the preconstruction conference or as specified at the CO's discretion. The timeline for the documents to be submitted will be addressed at the preconstruction conference for those items that were not received and approved prior. Notice to Proceed may not be issued, and the CO will consider other contractual remedies if not resolved as directed. Work shall not

commence until written Notice to Proceed has been issued. CO will notify Contractor of tentative date for the preconstruction conference:

1. Letter designating Project Superintendent.
2. Construction Schedule. (Must include shop drawings, procurement time including long lead time items, mobilization, trade work progression and completion at minimum.)
3. A comprehensive breakdown of the Schedule of Values.
4. APP (see section 7 of this document).
5. A list of Subcontractors for this project.
6. Written statements from subcontractors certifying compliance with applicable labor standard clauses (SF1413).
7. Quality Control Plan.
8. Waste Management Plan.
9. Historic Preservation Treatment Plan Submitted to the National Park Service.

9.2 Project Submittal Process (Shop Drawings, Product Data, and Samples): CO will provide sample cover sheet and a list of required submittals is included in each technical specification or attached at the end of this document.

A. Shop Drawings: Indicate all coordinating materials and work impacting the installation coordination, connection details, anchorage requirements, hardware locations, and installation details and locations.

1. Submit Shop Drawings according to Part 9.1 of this section to include one digital file (.PDF or .TIF) and two full size hardcopy documents to COR.

B. Product Data: Provide component construction and specification data sheets, anchorage requirements and any other product specific data.

1. Submit Product Data according to Part 9.1 of this section to include one digital file (.PDF or .TIF) to COR.

C. Samples: Submit 2 color samples 4” x 6” minimum in size for all product color selections. Paint samples shall be actual paint finish drawdown for all project colors.

1. Submit Samples CM-16 Transmittal Form according to Part 9.1 of this section to include one digital file (.PDF or .TIF) and physical samples of actual material to COR.

D. For submittals specified above, forward submittals to CO and COR at least 15 days before need for approval (depends on length of project).

E. After approving submittals, CO and/or COR will return one copy to the Contractor. If submittals are not approved, CO will return all copies to Contractor with reasons for rejection.

Resubmit, identifying changes. Any work done before approval shall be at Contractor's own risk.

9.3 Approved Equals: All brand names noted are subject to ‘or equal’ products. If an item in this solicitation is identified as “brand name or equal” or lists more than 1 manufacturer, the description of the proposed item must reflect the characteristics and level of quality that will satisfy the Government’s needs as demonstrated by the salient physical, functional, or performance characteristics that “equal” products must meet and/or exceed that as specified in the solicitation or relevant specification. Contractor shall incorporate and be responsible for all collateral costs due to the or equal proposed as required to provide a complete project.

A. For each item proposed as an “approved equal,” submit supporting data, including:

1. Drawings and samples as appropriate.
2. Comparison of the characteristics of the proposed item with that specified and with the salient characteristics provided.
3. Changes required in other elements of the work because of the substitution.
4. Name, address, and telephone number of vendor.
5. Manufacturer’s literature regarding installation, operation, and maintenance, including schematics for electrical and hydraulic systems, lubrication requirements, and parts lists. Describe availability of maintenance service, and state source of replacement materials.

B. A request for approval constitutes a representation that General Contractor:

1. Has investigated and shall provide documentation in request showing that the proposed item is equal or superior in all respects to the salient characteristics specified.
2. Will meet or exceed warranties for the proposed item specified.
3. Has determined that the proposed item is compatible with interfacing items.
4. Will coordinate the installation of an approved item and make all changes required in other elements of the work because of the substitution.
5. Waives all claims for additional expenses that may be incurred as a result of the substitution.

C. Approved Equals will be evaluated and approved/disapproved during the submittal process.

9.4 Schedule of Values: Submit the Schedule of Values a minimum of one week prior to the preconstruction conference for COR review. Schedule of Values shall include defined work line items with cost break downs including labor, material, and equipment for COR approval.

9.5 Progress Reporting: The initial Construction Schedule and Schedule of Values are required a minimum of one week prior to the preconstruction conference. After the Notice to Proceed is issued and after on-site work begins, progress will be documented via daily logs and by providing an updated Construction Schedule and Schedule of Values when requested, but minimally with each pay application. Submit digital copy electronically (PDF preferred) of all required

documents. Construction Schedules are normally in bar chart form and indicate estimated starting and completion dates for each part of the work. For a pay application to be reviewed and processed in a timely manner, the following information must either be submitted prior to or accompany submission of the pay application:

A. Daily/weekly progress reports during construction as part of the administration process.

B. Updated Schedule of Values: Breakdown each lump-sum item into component work activities used in the schedule, for which progress payments may be requested. The Schedule of Values will form the basis for payment. The work activities broken out within the schedule of values shall be integrated into and made a logical part of the construction baseline schedule submitted under this specification. The total costs for the component work activities shall equal the contract price for that lump-sum item. The CO may request data to verify accuracy of dollar values. A sample Schedule of Values format may be provided upon request.

ITEM 10 – TEMPORARY SERVICES

10.1 It is the Contractor's responsibility to provide temporary services, equipment, tools, and skilled labor as required for the chosen means and methods to perform the work in accomplishing this Contract.

ITEM 11 - PROJECT CLOSEOUT

11.1 Description: The work of this section consists of final cleanup, closeout submittals, final inspection procedures working toward Final Acceptance.

11.2 Cleaning: Remove all tools, equipment, surplus materials, and rubbish. Move attic stock to location coordinated with COR. At time of final inspection, project shall be thoroughly clean and ready for intended use. Inspector holds the right to reschedule if project is not ready for inspection.

11.3 Completion and Final Inspection: Contractor shall submit written certification of project completion and request a final inspection to the CO and COR. The CO or designee will make an inspection within 10 days of receipt of request or at a mutually agreeable time.

A. If the work is determined to be complete following the final inspection with minor comments, the COR will prepare and provide the Contractor a Punch List noting outstanding items to be addressed.
B. If the work is not determined to be complete following the final inspection, the CO will notify Contractor in writing, stating reasons. Contractor, after completing the work according to the Contract Documents, shall resubmit completion and request a new final inspection. Re-inspection costs may be charged against the Contractor in accordance with the Inspection of Construction contract clause.

C. Contractor shall complete the Punch List within 30 calendar days, or a time directed by the CO.

D. Once Contractor completes all items of work on the Punch List and all contractually required items are accepted, CO will issue Letter of Final Acceptance of Work and request the final pay application.

E. If the Contractor fails to complete the work within the time frame, the CO may correct the work with an appropriate reduction in contract price or charge for re-inspection costs in accordance with the Inspection of Construction contract clause.

F. Disposition of any permits and warranties required by the specifications in this section.

11.4 Final Acceptance of the Work: After all punch list deficiencies have been corrected, a Letter of Final Acceptance will be issued. A Release of Claims document must be executed and submitted to the CO before final payment can occur.

11.5 Warranties

A. Construction Warranty shall be based on date of final acceptance of the work and remain in effect for one year.

B. Provide all manufacturer warranty information of products installed organized by Division. All contact information, extent of coverage and conditions shall be clearly noted as well as date of overall final acceptance.

C. Information shall include operation and maintenance manuals for each warranted product.

ITEM 12 - DEFINITION OF CONTRACT LINE ITEMS

12.1 Summary

A. The intent of this section is to explain, in general, what is and what is not included in a contract line item, and the limits or cut off points where one item ends and another begins.

B. If no contract line item exists for a portion of the work, include the costs in a related item.

12.2 List of Contract Line Items

A. Contract Line Item No.1 – Church

1. This item consists of:

a. Lifting Building, Foundations, Basement Excavation, Exterior wood siding repairs and reinforcing structural members, new chimneys, roofing, interior finish work, new concrete stair, door and window work, new hardware, disconnect and reconnect electrical, Grading Landscape Restoration.

2. Payment will be made per the contract and percentage of completion level.

B. Contract Line Item No. 2 - Option 1: Window Repairs

1. This item consists of:

a. Full restoration of window sash, sills, frames, glazing.

2. Payment will be made per the contract and percentage of completion level.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXCUTION (NOT USED)

END OF SECTION

SECTION 01 32 33 – PHOTO DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for:

1. Existing condition images
2. Periodic construction images
3. Closeout condition images

B. See Division 01 – Project Closeout for a complete listing of closeout documents.

1.2 SUBMITTALS

A. Existing condition and construction Images: Submit images electronically within seven days of taking the image. Include:

1. Date, time and number (sequentially number all images) in filename.
2. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
3. Submit digital images exactly as originally recorded in digital camera, without alteration, or modifications using image-editing software.

B. Closeout: Submit complete set of digital image electronic files as a Project Record Document**.** Contractor to coordinate with Park for approval of transfer method prior to submittal.

1. Provide index. List each image as a file name with number, date, and time. Include description and or vantage point image was taken.
2. Submit images that have the same aspect ratio as the sensor, un-cropped.

PART 2 - PRODUCTS

2.1 FORMAT REQUIREMENTS

A. Media: Electronic Files. Contractor to coordinate with Park for approval of transfer method prior to submittal.

B. Images: Provide sRGB (standard Red Green Blue) color images in JPEG (Joint Photographic Experts Group) format. Minimum sensor size of 8 megapixels, and at image resolution of not less than 3200 by 2400 and 300 dpi (dots per inch).

PART 3 - EXECUTION

3.1 CONSTRUCTION IMAGES

A. General: Take digital images using the maximum range of depth of field, in-focus, to clearly show the Work. No blurry or out-of-focus areas accepted.

1. Maintain index with each set of Construction images and identify the number, date, time, and description for each.
2. Maintain one set of images accessible in field office at Project site available for reference.

B. Existing Condition Images: Before commencement of excavation, commencement of demolition and starting construction, take color digital images of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.

1. Flag excavation areas and construction limits before recording construction images.
2. Take sixteen separate images to show existing conditions adjacent to property before starting Work.
3. Take sixteen separate images of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.

C. Periodic Construction Images: Take 12 color, digital images weekly, with timing each month adjusted to coincide with cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last images were taken.

D. Additional Images: CO may issue requests for additional images.

1. Three days advance, where feasible.
2. In emergency situations, take additional images within 24 hours of request.
3. Additional images include, but are not limited to:
   a. Immediate follow-up when on-site events result in construction damage or losses.
   b. Fabrication locations away from Project site.
   c. Substantial Completion of a major phase or component of Work.
   d. Extra record images at time of final acceptance.

END OF SECTION 01 32 33

SECTION 01 35 13.22 – ARCHEOLOGICAL PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section consists of protecting archeological resources contained in soil deposits.

1.2 DEFINITIONS

A. Archeological Resources: Archeological resources are physical evidences of past human activity, including evidences of effects of that activity on the environment. Archeological resources represent both prehistoric and historic time periods, found above and below ground and under water.

B. Archeologically Sensitive Areas: Areas having potential to contain significant (National Register eligible) archeological resources. If National Register eligible or listed archeological resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with state historic preservation officer and, if necessary, associated American Indian tribes.

C. Non-sensitive Areas: Areas with little potential of containing significant (National Register eligible) archeological resources.

D. Archeological Monitor: Representative of Government designated to oversee construction activities that could disturb archeological resources.

E. Archeological Resources Protection Act (ARPA) of 1979 (Public Law (P.L.) 96-95; 93 United States Statues at Large (Stat.) 712): defines archeological resources as any material remains of past human life or activities that are of archeological interest and at least 100 years old; Section 4 of the statute describes the requirements that must be met before Federal authorities can issue a permit to excavate or remove any archeological resource on Federal or Indian lands; the curatorial requirements of artifacts, and other materials excavated or removed.

1.3 SUBMITTALS

A. Protection Plan: Provide CO/COR with a detailed protection plan that includes how the Manse Ruins or other identified areas within the Project Limits are to be protected before work begins and during the construction project.
   1. Submit to Contracting Officer (CO) 30 days before start of ground disturbing site work.
   2. CO/COR to provide contractor with limits of Manse Ruins Area to be avoided as well as any identified areas within the Project Limits.

B. Ground Protection Design: Submit product data for materials, Shop Drawings, test reports, site plan indicating equipment and paths, and monitoring procedures, to Contracting Officer 30 days before on-site work for approval and coordination with Archaeological Monitor.

1.4 QUALITY ASSURANCE

A. At least one week before on-site work begins, Contractor shall meet with Contracting Officer and Archeological Monitor to discuss Daily Work Schedule, equipment, and special methods used in and adjacent to archeologically sensitive areas. Contractor shall ensure approved Daily Work Schedule is followed throughout construction.

PART 2 - PRODUCTS

2.1 DAILY WORK SCHEDULE

A. Daily Work Schedule is required for work occurring within or adjacent to archeologically sensitive areas. Include all work that is to occur within the area and key the schedule to the drawings to include:

1. Starting and ending dates of ground-disturbing construction.
2. Locations of temporary facilities, such as barriers, field offices, staging areas, sanitary facilities, borrow pits, and haul and access roads.
3. Types of construction, such as clearing, topsoil stripping, structure or trench excavation, landscaping, and post construction clean-up.
4. Methods and equipment used for each type of construction.
5. Plan for relocating work in the event of temporary work stoppages at each archeologically sensitive area

2.2 TEMPORARY PROTECTIONS

A. Ground Protection: Sized to fit all equipment including weight, length, width.
   1. Material shall withstand a Minimum of 600 PSI .
   2. Based on soil conditions identified during testing, ground protection shall be engineered to withstand equipment loads.

2.3 PERFORMANCE REQUIREMENTS

A. Ground Disturbance: Ground shall be tested in accordance with industry standards. Contractor shall utilize findings to develop an engineered ground protection system. This may consist of different mats for various equipment and paths.
   a. Compaction limited to 1-inch

PART 3 - EXECUTION

3.1 BARRICADES

A. Comply with requirements specified in Division 01 Item 3 – Contractor’s Use of Premises, including 3.3 Contractor Use of Site.

3.2 ARCHEOLOGICAL INVESTIGATION BY NON-NPS PERSONNEL

A. A permit is required for archeological investigations (e.g. excavation, shovel testing, coring, pedestrian survey, underwater archeology, rock art documentation, or other types of reconnaissance including archaeological monitoring of construction) carried out on parklands by non-National Park Service (NPS) personnel, unless carried out under a contract or a cooperative agreement specifically written for archeological investigations. Permits are issued under the Archaeological Resources Protection Act of 1979 (ARPA). The NPS does not issue a permit for archeological investigations carried out by NPS archeologists, or to archeologists working on NPS archeological projects under a contract or cooperative agreement.

B. Applicants should submit a Permit Application (DI Form 1926 (Revision September 2004) Office of Management and Budget (OMB) Number (No.) 1024-0037, approved through 1/31/2008. Permit Application form is available, in PDF (portable document file) format, to the manager of the park in which they propose to work; or to the regional director, with a copy to the park manager.

3.3 OBSERVATION

A. Archeological Monitor will observe ground-disturbing site work, including construction of temporary facilities, at archeologically sensitive areas, from a safe location mutually agreed on by Contractor and Monitor. As new ground is broken, Monitor will examine excavated materials, using construction layout centerline and perimeter staking as a reference point to record locations of findings.

3.4 DISCOVERY OF RESOURCES

A. If Archeological Monitor discovers resources, immediate relocation of work to a non-sensitive area may be required for Monitor to identify and document resources and, if necessary, develop appropriate mitigation plan. While Archeological Monitor is documenting resources in sensitive areas, Contractor shall relocate work to non-sensitive areas where monitoring is not normally required.

B. If resources are discovered while Archeological Monitor is absent, stop work immediately and report the discovery to the Contracting Officer.

3.5 WORK STOPPAGE

A. Contractor shall plan, schedule, and execute work to prevent stoppages at one area from stopping all work at construction site.

3.6 ACCESS ROUTES AND STAGING AREAS

A. Work will occur near an area of archeological sensitivity. As such, off-road access routes to the work site will require review and approval by Park staff. No use of unauthorized access routes are permitted at any time.

B. Ground protection mats shall be used for all unpaved access routes. Ground protection mats are also required for the stationary use of equipment within the Project Limits, as well as the temporary staging of materials within the Project Limits or any other unpaved location approved by Park staff.

1. Mats and ground protections shall be designed such that compaction of earth shall not be greater than 1-inch.

C. Motorized or engine-driven heavy equipment creating vibrations shall be placed a minimum distance away from designated archeological sites. The placement of equipment must be reviewed and approved by the Archeological Monitor.

3.7 WORK PRACTICES

A. The archeological resources within and adjacent to the project area are of great cultural importance and will be treated with care and respect. An archeological monitor will be present when contractors require earth work.

B. Excavation, removal, damage, alteration or defacement of architectural ruins is prohibited. Contractors will be required to participate in a cultural sensitivity and archaeological site etiquette discussion before beginning any work. These discussions will provide information on respectful and appropriate treatment or resources as well as penalties for illegal activities.

C. Touching architectural ruins or leaning equipment, ladders or other objects against adjacent cultural sites is strictly prohibited.

D. Ground disturbance is prohibited within the project area unless approved by the park's archeological monitor.

END OF SECTION 01 35 13.22

SECTION 01 35 91

HISTORIC PRESERVATION TREATMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes special procedures for historic treatment on Project including, but not limited to:

1. Definitions
2. Submittals
3. Quality Assurance
4. Storage and protection of existing historic materials
5. Project site conditions
6. Historic Preservation Treatment Plan
7. Protection, General
8. Protection during application of chemicals
9. Protection during use of heat-generating equipment
10. Historic preservation treatment procedures

1.2 DEFINITIONS

A. "Preservation" - To apply measures necessary to sustain existing form, integrity, and materials of historic property. Work may include preliminary measures to protect and stabilize the property.

B. "Rehabilitation" - To make possible a compatible use for property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.

C. "Restoration" - To accurately return form, features, and character of a property to its appearance at a particular period of time by means of removal of features from other periods in its history and repair and reconstruction of missing and deteriorated features from the restoration period.

D. "Reconstruction" - To reproduce in exact form and detail, a building, structure, or artifact as it appeared at a specific period in time. Reconstructed elements do not possess historic integrity in their own right since they are-not original fabric.

E. "Stabilize" - To apply measures designed to reestablish a weather-resistant enclosure and structural reinforcement of an item or portion of the building while maintaining essential form as it exists at present. This level of intervention is aimed at retarding or arresting adverse impacts to structures.

F. "Protect and Maintain" - To remove deteriorating corrosion, reapply protective coatings, and install protective measures such as temporary guards; to provide the least degree of intervention.

G. "Repair" - To stabilize, consolidate, or conserve; to retain existing materials and features while employing as little new material as possible. Repair includes patching, piecing-in, splicing,

consolidating, or otherwise reinforcing or upgrading materials. Within restoration, repair also includes limited replacement in kind, rehabilitation, and reconstruction, with compatible substitute materials for deteriorated or missing parts of features when there are surviving prototypes.

H. "Replace" - To duplicate in its entirety, a historic element or feature by matching its historic pattern, detail and appearance. Replacement is justified when original or historic elements are damaged beyond repair or are missing. Replacement conditions and methods include:

1. Replacement with Original or Historic Fabric: Includes fabric salvaged from other locations or projects having identical architectural qualities. Duplication of appearance using identical material possessing historical significance.
2. Replacement with New Materials: Includes replacement with new material of like kind (custom fabricated of manufactured). Duplication of appearance using like material.
3. Replacement with Substitute Materials: Includes replacement with a compatible substitute that is frequently contemporary and unlike the historic fabric. Duplication of appearance using modern (non-traditional) material. Use of substitute materials is not approved unless matching materials are not available.

I. "Remove" - To demolish or detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

J. "Remove and Salvage" - To detach items from existing construction and store them until they are reinstalled OR deliver them ready for storage to CO or designee.

K. "Remove and Reinstall" - To detach items from existing construction, repair and prepare for reuse, and reinstall where indicated.

L. "Existing to Remain" or "Retain" - Existing items of construction not to be removed and not otherwise indicated to be removed and salvaged or removed and reinstalled.

M. "Material in Kind" - Material that closely matches existing materials through comparison of architectural qualities and salient characteristic such as species, cut, color, grain, dimension, profile, thickness, and finish.

1.3 SUBMITTALS

A. Historic Preservation Treatment Plan:

1. After contract award and before Pre-Construction conference, submit for approval a written Historic Preservation Treatment Plan (HPTP).
2. If the plan requires revisions or corrections, Contractor shall resubmit plan within 10 days.
3. No change in approved plan may be made without written concurrence by CO.
4. Plan shall include:
   a. Sequence and Phasing Plan
      1) Define what materials are to be removed and salvaged prior to the building lifting.
      2) Windows are to be protected in-place.
      3) Most salvaged material will be repaired and then reinstalled.

4) Coordinate with Park on the removal and salvage of loose and unattached items in the building, where they are to be stored and when the Park can return them to the building.

b. New foundation will be treated with a board-form liner to provide exterior texture to resemble the appearance of the original, historic, foundation.

c. Concrete color will be controlled to match the color of the historic foundation. Consistent with the original treatment, the foundation will be unpainted natural concrete.

d. A minimum 12” X 12” by full depth sample panel of the historic foundation will be salvaged and turned over to the Park to become a part of their museum collection and for possible display on site.

B. Alternative Methods and Materials: If alternative methods and materials to those indicated are proposed for any phase of work, provide a written description including evidence of successful use on other, comparable projects, and program of testing to demonstrate effectiveness for use on this Project.

C. Photographs or Videotape: In accordance with Section 01 32 33 "Photographic Documentation," show existing conditions of interiors, adjoining construction and site improvements including finish surfaces that might be misconstrued as damage caused by historic treatment operations. Submit before work begins.

1.4 QUALITY ASSURANCE

A. Historic Preservation Treatment Specialist Qualifications: Experienced firm with required certifications and training able to demonstrate through past performance they are qualified to perform this work.

1.5 STORAGE AND PROTECTION OF HISTORIC MATERIALS

A. Removed and Salvaged Historic Materials:

1. Proposed storage area location will be submitted to the CO.
2. Do not commence with salvage operation until storage area is approved by NPS
3. Clean salvaged historic items.
4. Pack or crate items after cleaning. Identify contents of containers.
5. Transport items to storage area indicated on Drawings and coordinated with CO / COR.
6. Protect items from damage during transport and storage.
7. Do not dispose of items removed from existing construction without prior written consent of CO.

B. Removed and Reinstalled Historic Materials:

1. Clean and repair historic 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 as designed.

C. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling during historic treatment. When permitted by CO, items may be removed to suitable, protected storage location during historic treatment and cleaned and reinstalled in their original locations after historic treatment operations are complete.

D. Storage and Protection: When removed from existing location, store historic materials within weather-tight enclosure protected from wetting by rain, snow, or ground water, and temperature variations. Secure stored materials to protect from theft.

1. Identify removed items with an inconspicuous mark indicating original location.
2. Develop key plan when many similar items are scheduled for removal and reinstallation.

1.6 PROJECT-SITE CONDITIONS

A. Exterior Cleaning and Repairing:

1. Proceed with work only when forecasted weather conditions are favorable.
   a. Wet Weather: Do not attempt repairs during rainy or foggy weather. Do not apply primer, paint, putty, or epoxy when relative humidity is above 80 percent. Do not remove exterior elements of structures when rain is forecast or in progress.
   b. Do not perform exterior wet work when air temperature is below 40 degrees Fahrenheit.
   c. Do not begin cleaning, patching, or repairing given likelihood of frost or freezing.
   d. Do not begin cleaning when either air or surface temperature is below 45 degrees Fahrenheit unless approved means are provided for maintaining 45 degrees Fahrenheit temperature of air and materials during, and for 48 hours subsequent to, cleaning.

2. Perform cleaning and rinsing of the exterior only during daylight hours.

B. Conduct historic treatment so National Park Service operations will not be disrupted. Provide 72 hours' notice to CO of activities that will affect National Park Service operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 HISTORIC PRESERVATION TREATMENT PLAN

A. Prepare written plan for preservation work covering preservation components of project. Plan shall verify construction strategy and intent is compatible with Secretary of the Interior’s standards for Treatment of Historic Properties, guidelines for Treatment of Cultural Landscapes, and National Park Service management policies for cultural resources. Plan shall satisfy both project scope and resource protection requirements. Plan shall include:

1. Organized list of preservation components of project, systems, and tasks
2. Staging and sequence of work

3. Disassembly and reassembly techniques and steps
4. Equipment and tools required
5. Supplies and materials with manufacturer or supplier identified including specific clean up/storage procedure including frequency and documentation of such.
6. Skilled trades and crafts required
7. Anticipated testing and analysis of fabric
8. Additional investigations for extents or magnitude of treatments needed
9. Protective measures
10. Seasonal limitations on work
11. Alternative means if primary treatment method is unfeasible
12. Work conducted off-site (Approval from CO required prior to taking resources off-site).

3.2 PROTECTION, GENERAL

A. Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation.

B. Ensure supervisory personnel are present when work begins and during progress.

C. Temporary Protection of Historic Materials during Construction:

1. Salvage material as noted on drawings prior to demolition process. Protect salvaged material until reinstalled or delivered to CO.
2. Protect existing materials during installation of temporary protections and construction. Do not deface or remove existing materials.
3. Attachments of temporary protection to existing construction shall be approved by CO prior to installation.

D. Protect landscape work adjacent to or within work areas as follows:

1. Provide barriers to protect tree trunks.
2. Bind spreading shrubs.
3. Coverings shall allow plants to breathe. Remove coverings at end of day. Do not cover plant material with waterproof membrane more than 8 hours at a time.
4. Set scaffolding and ladder legs away from plants.

E. Existing Drains: Prior to start of work or cleaning operations, test drains and other water removal systems to ensure drains and systems function properly. Notify CO immediately of stopped or blocked drains or systems. Do not begin Work of this Section until drains are in working order.

1. Provide method to prevent solids including stone or mortar residue from entering drains or drain lines. Clean out drains and drain lines blocked or filled because of work performed under this Contract.
2. Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.3 PROTECTION DURING APPLICATION OF CHEMICALS

A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm or damage resulting from applications of chemical cleaners and paint removers.

B. Comply with requirements in Division 01.

C. Cover adjacent surfaces with materials proven to resist chemical cleaners selected for Project unless chemicals being used will not damage adjacent surfaces. Use covering materials containing only waterproof, UV (ultraviolet)-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. Promptly remove masking to prevent adhesive staining on completion.

D. Do not clean surfaces during winds of sufficient force to spread cleaning solutions to unprotected surfaces.

E. Neutralize and collect alkaline and acid wastes and dispose of outside park boundaries.

F. Dispose of runoff from chemical operations by legal means and in a manner preventing soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

G. Document daily clean-up, proper storage, and disposition of any flammable/combustible materials with daily reports.

3.4 HISTORIC PRESERVATION TREATMENT PROCEDURES

The principal aim of preservation work is to halt the process of deterioration and stabilize the item's condition to sustain the integrity of the historic element, feature or structure being preserved. Cyclic maintenance is often required as well as repair work. Repair is required where specifically indicated. The following procedures shall be followed:

1. Retain as much existing material as possible; repair and consolidate rather than replace.
2. Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure.
3. Use reversible processes wherever possible.
4. Use traditional replacement materials and techniques if possible. New work shall be distinguishable from old work and original materials and techniques.
5. Record repair work during construction with periodic construction photos and daily inspection reporting. Photo documentation is specified in Section 01 32 33 "Photo Documentation."

B. Prohibit smoking by personnel performing work on or near historic structures.

C. Notify CO of visible changes in integrity of material or components due to environmental causes including biological attack, UV degradation, freezing, or thawing, or due to structural defects including cracks, movement, or distortion.

1. Do not proceed with work in question until directed by CO.

D. Where Work requires existing features to be removed, cleaned, and reinstalled, perform operations without damage to material itself, to adjacent materials, or to substrate.

E. Identify new or replacement materials and features with inconspicuous, permanent marks to distinguish from original materials. Record legend of identification marks and locations of these marks on Record Drawings.

F. When cleaning, match samples of existing materials that have been cleaned and identified for acceptable cleaning levels. Avoid over-cleaning to prevent damage. Use gentlest methods available. Initiate cleaning using hand cleaning methods before introducing power cleaning methods and equipment.

END OF SECTION 01 35 91

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes procedural requirements for cutting and patching on buildings that contain Historic Fabric.

1.2 RELATED SECTIONS

A. Division 01 – Item 2 - Protecting Existing Utilities: For dust control management for cutting and patching procedures.

1.3 SUBMITTALS

A. Cutting and Patching Plan: Submit Plan describing procedures at least 10 days before cutting and patching will be performed, requesting approval to proceed. Include:

1. Extent: Describe cutting and patching, show how performed, and indicate why they cannot be avoided.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. Products: List products to be used and firms or entities that will perform Work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure. Do not cut and patch structural elements in a manner that could change their load carrying capacity or increase deflection.
7. CO Approval: Obtain approval of cutting and patching plan before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related 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.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on exterior or in occupied spaces in a manner that would, in CO opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.5 WARRANTY

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

PART 2 - PRODUCTS

2.1 MATERIALS

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

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

2. If identical materials are unavailable or cannot be used, use materials that will match the visual and functional performance of in-place materials when installed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. 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.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. 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.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at earliest feasible time. Complete without delay.

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

B. 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 and 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 as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using an abrasive saw or a diamond-core drill, upon approval by CO.
4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
5. 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.
6. Proceed with patching after construction operations cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another. Patch and repair floor and wall surfaces in 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.
4. Ceilings: Patch, repair, or re-hang 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 weather tight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 73 29

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Solid Waste: Garbage, debris, sludge, or other discharged material (except hazardous waste) including solid, liquid, semisolid, or contained gaseous materials resulting from domestic, industrial, commercial, mining, or agricultural operations.

D. Debris: Non-hazardous solid waste generated during construction, demolition, or renovation of a structure which exceeds 2.5 inch (60 millimeter) particle size that is: a manufactured object; plant or animal matter; or natural geologic material (e.g. cobbles and boulders). A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if mixture is comprised primarily of debris by volume, based on visual inspection.

E. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

F. Environmental Pollution and Damage: Presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; or degrade utility of environment for aesthetic, cultural, or historical purposes.

G. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

H. Hazardous Materials: Material regulated as a hazardous material in accordance with 49 CFR 173 (Code of Federal Regulations), requires a Material Safety Data Sheet (MSDS) in accordance with 29 CFR 1910.1200, or which during end use, treatment, handling, storage, transportation or disposal meets or has components which meet or have potential to meet the definition of Hazardous Waste in accordance with 40 CFR 261.

I. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

J. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

K. Single-use plastic products: Plastic items intended to be disposed of immediately after use, including plastic and polystyrene food and beverage containers, bottles, straws, cups, cutlery, and disposable plastic bags.

1.3 PERFORMANCE REQUIREMENTS

A. General: Project shall minimize creation of construction, deconstruction, and demolition waste to protect and restore natural habitat and resources. Minimize factors contributing to waste such as over packaging, improper storage, ordering error, poor planning, breakage, mishandling, single-use plastic products, and contamination. A Waste Management Plan shall be developed to ensure that existing site and building materials are reused, salvaged, or recycled. Minimize waste disposal in landfills.

B. Salvage /Recycle Requirements: Develop waste management plan resulting in end-of-Project rates for salvage/recycling of 50 percent by weight of total waste generated by the Work. The following waste categories, at a minimum, shall be diverted from a landfill:

1. Land clearing debris (chipped debris can be used on site for mulch or erosion control)
2. Clean dimensional wood, palettes
3. Plywood, OSB (oriented strand board), and particle board
4. Concrete (can be ground and used for fill on site)
5. Asphaltic concrete (can be ground and used for fill on site)
6. Cardboard, paper, packaging, newsprint
7. Metals (from banding, stud trim, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze)
8. Gypsum drywall - unpainted
9. Non-hazardous paint and paint cans
10. Beverage containers: Aluminum, glass, and plastic containers
11. Insulation
12. Ceiling grid and tiles
13. Ductwork
14. Wiring
15. Other mixed construction and demolition waste as appropriate.

C. If waste materials encountered during deconstruction/demolition or construction phase are found to contain lead, asbestos, polychlorinated biphenyls (PCBs), (such as fluorescent lamp ballasts), or other harmful substances, they are to be handled and removed in accordance with local, state, and federal laws and requirements concerning hazardous waste.

D. Existing items and material to be removed during deconstruction/demolition phase shall be reused in construction phase of the Project. Items that cannot be reused shall be recycled. Items considered for reuse must be in refurbishable condition and must meet quality standards set forth in these specifications. Contractor shall ensure quality of the item(s) in question will meet or

exceed accepted industry or trade standards for first quality commercial grade application. During construction, deconstruction, or demolition CO may designate other objects or materials for reuse.

E. Salvage/Recycle Requirements: Government goal is to salvage and recycle as much nonhazardous demolition and construction waste as possible including the following materials:

F. Contractor shall removal all loose trash and debris daily from the job site.

1.4 SUBMITTALS

A. Waste Management Plan: After award of contract and prior to scheduled Pre-Construction Conference, Contractor shall submit a draft Waste Management Plan to CO for approval. Revise and resubmit Plan as required by CO. Contractor to coordinate with Park for approval of transfer method prior to submittal. Approval of Contractor's Plan will not relieve Contractor of responsibility for compliance with applicable environmental regulations.

B. Progress Documentation: Supplemental to Waste Management Plan, document solid waste disposal, diversion, and cost/revenue analysis and submit completed worksheet on a monthly basis. See Project Waste Management Plan Worksheet Sample, attached to the end of the Division 1 Specifications, and report totals to date for column headings.

C. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

H. Qualification Data: For Waste Management Coordinator and refrigerant recovery technician.

I. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating refrigerant that was present was recovered and recovery was performed according to Environmental Protection Agency (EPA) regulations. Include name and address of technician and date refrigerant was recovered.

J. Progress payment requirements:

1. With each Application for payment, submit an updated Project Waste Management Plan worksheet for solid waste disposal and diversion.

2. With each Application for Payment, submit manifests, weight tickets, receipts, and invoices specifically identifying the Project and waste material.

K. Closeout Submittals

1. With Closeout Submittals, submit a summary of a Project Waste Management Plan worksheet for solid waste disposal and diversion.

1.5 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, with record of successful waste management coordination of projects with similar requirements.

B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Waste Management Meeting: Conduct separate meeting or cover in Pre-Construction Conference and comply with requirements in Division 01 – Item 3 "Contractor's use of Premises" Review methods and procedures related to waste management including:

1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review procedures for reduction of single-use plastic products on site.
6. Review waste management requirements for each trade.

PART 2 - PRODUCTS

2.1 WASTE MANAGEMENT PLAN

A. General: Develop plan consisting of waste identification and waste reduction work plan. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight or volume but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials salvaged and reused in Project, describe methods for preparing salvaged materials before incorporation into the Work.

2. Salvaged Materials for Donation: For materials donated to individuals and organizations, include list of names, addresses, and telephone numbers.
3. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
4. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
5. Handling and Transportation Procedures: Include method used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.
6. Reduction of single-use plastic products: Include methods for water distribution to include bottle refilling stations if available for personnel.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include:

1. Landfill tip fees per ton.
2. If diverted, tip fee savings from landfill diversion.
3. Costs of recycling, salvage, or reuse.
4. Revenue from recycling, salvage, or reuse.
5. Total cost or savings from diversion. (Calculate by using tip fee savings and subtracting costs of recycling or adding revenue from recycling.)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement waste management plan as approved by CO. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during entire duration of Contract.

B. Waste Management Coordinator: Engage waste management coordinator responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.

C. Contractor shall establish contacts with local recycling and reuse companies to set up lines of responsibility. Contractor shall be responsible for coordination in terms of identifying materials, pickup schedules, and standard quality for recycled materials.

D. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

E. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

F. Separation facilities:

1. Contractor shall designate and CO shall approve specific area or areas to facilitate separation of materials for potential reuse, salvage, recycling, and return.
2. Place waste and recycling bins near each other, and close to point of waste generation but out of traffic pattern.
3. Keep recycling and waste bin areas neat, clean, and clearly marked in order to avoid co-mingling of materials.
4. Protect bins during non-working hours from off-site contamination.
5. Check garbage dumpsters periodically for recyclables being thrown away and undocumented materials that could be recycled.

G. Materials handling procedures: Material to be recycled shall be protected from contamination and shall be handled, stored, and transported in a manner that meets requirements set by designated facilities for acceptance. Establish defined area for operations of each trade, especially woodcutting so off-cuts are kept in one area and can be sorted by dimension for future reuse.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale Not permitted on Project site.

C. Salvaged Items for Governments Use:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Allow for inspection if necessary.
4. Store items in secure area until delivery to Government.
5. Transport items to storage area on-site designated by CO.
6. Protect items from damage during transport and storage.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Receivers and Processors: Ask CO to provide information of available recycling receivers and processors.

C. Allowing Contractor to accrue some portion of recycling incentives in paragraph below could result in better recovery rates than if Government accrues incentives.

D. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be solely for the Contractor.

E. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to maximum extent practical.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off ground and protect from weather.
5. Remove recyclable waste off Government property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

1. Pulverize concrete to maximum 4 inch (100 millimeter) size.

B. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

1. Pulverize masonry to maximum 4 inch (100 millimeter) size.
2. Clean and stack undamaged, whole masonry units on wood pallets.

C. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

D. Metals: Separate metals by type.

1. Roofing Sheet Metal: Stack members according to size, type of member, and length.

2. Structural Steel: Stack members according to size, type of member, and length.
3. Remove and dispose of bolts, nuts, washers, and other rough hardware.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

G. Conduit: Reduce conduit to straight lengths and store by type and size.

H. Electronic Products: Ensure non-usable electronic products are reused, donated, sold, or recycled using environmentally sound management practices at end of life.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Site-Clearing Wastes: Chip brush, branches, and trees at landfill facility.

C. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust not containing painted or treated wood.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose in landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials to accumulate on-site.
2. Remove and transport debris in manner preventing spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Government property and legally dispose of them.

END OF SECTION 01 74 19

SECTION 02 41 19

SELECTIVE DISASSEMBLY AND DEMOLITION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Base Bid:
   1. General Contractor shall provide all labor, materials, equipment, and services necessary or incidental to the completion of all work of this section as shown on the drawings, herein specified, or otherwise required.
      a. Disassembly, salvage, storage of selected elements of the building, structural work, repairs, and reinstallation of some items.
      b. Demolition and removal of selected portions of building

   2. Option Bids:
      a. Option 1: Window Repairs

1.2 RELATED REQUIREMENTS:

1. Division 01 General Requirements.
   a. 1.1 Description of Work
   b. 1.2 Work Covered by the Contract Documents
2. Section 01 35 91 – Selective Disassembly and Demolition
3. Section 06 10 00 – Rough Carpentry
4. Section 06 16 00 – Sheathing
5. Section 26 00 00 – Common Work Results for Electrical

1.3 DEFINITIONS

A. See Section 01 35 91 Historic Preservation Treatment Procedures.

1.3 MATERIALS

A. Unless otherwise indicated, demolition waste becomes property of the National Park Service.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to The Park that may be uncovered during demolition remain the property of the Park.

   1. Carefully salvage in a manner to prevent damage and promptly return to the Park.

1.4 PREINSTALLATION MEETINGS

A. Pre-Disassembly/Demolition 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.

1.5 SUBMITTALS

A. Engineering Submittals: See Structural Drawings and Specifications for Requirements.

B. Salvage Material Treatment and Inventory Plan:

1. Submit plans and procedures for tagging, cataloging and labeling salvage material for storage and salvage material for reinstallation.
2. Coordinate this program with other related sections of this project.
3. This plan shall be submitted to CO/COR 15 days after Notice-to-Proceed for comment and approval.
4. General Contractor shall address all comments and resubmit plan for final approval by CO/COR.
5. Include the following:
   a. Describe labeling procedures for the following material items:
      1) Doors and Hardware
      2) Windows and Hardware
      3) Wood trim and siding
      4) Lighting Fixtures
      5) All other salvaged material indicated on Drawings and in specifications.
   b. Describe how you will map on a Drawing the inventory of these materials.
   c. Quality Assurance Narrative for ensuring all material is installed in EXACT previous location.
   d. Photographic documentation procedures of the material prior to packaging and as stored.

C. 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.

D. Schedule of Selective Disassembly/demo Activities: Indicate the following:

1. Detailed sequence of selective disassembly/demo and removal work, with starting and ending dates for each activity. Ensure National Park Service’s general 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.

E. Pre-disassembly/Demo Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by

disassembly/demo operations. Comply with Section 01 32 33 Photo Documentation Submit before Work begins.

F. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

G. Inventory: Submit a list of items that have been disassembled, catalogued, and salvaged and a list of items to be reinstalled.

1.6 QUALITY ASSURANCE

A. Conform to applicable codes for demolition work, dust control, products requiring electrical disconnection and re-connection.

B. Lead-based Paint and Asbestos containing material have been tested on the building in some locations. See Appendix Report, "Pre-Alteration Lead-based Paint Survey" dated, April 7, 2023. It is assumed that Lead-based Paint is present at windows and doors. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.

1.7 SEQUENCING

A. Coordinate all work in Pre Construction Meeting and get approval from CO before commencing work.

B. Coordinate all work with Structural Drawings.

C. Park to remove all furniture and non-attached items prior to Contractor starting disassembly or demolition procedures.

1.8 FIELD CONDITIONS

A. Conduct selective disassembly/demo so National Park Service's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by the National Park Service as far as practical.

1. Before selective disassembly/demolition, National Park Service will remove the following items:

a. All furniture to be retained by the National Park Service.
b. Equipment to be retained by the National Park Service.

C. Notify CO/COR of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: See Appendix reports on Lead-Based Paint (LBP) and Asbestos-Containing Materials (ACM). Hazardous materials are expected to be present in buildings and structures to be selectively demolished or disassembled. Reports on the presence of hazardous

materials is on file for review and use. Examine reports to become aware of locations where hazardous materials are present.

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 disassembly/demolition operations.

1.9 COORDINATION

A. Arrange selective disassembly/demolition schedule so as not to interfere with National Park Service's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

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

C. Sustainable Design Requirements for Building Reuse:

1. Maintain the existing building structure, envelope, and interior nonstructural elements of a historic building or contributing building in a historic district. Do not demolish such existing construction beyond indicated limits.
2. Maintain the existing building structure, envelope, and interior nonstructural elements of an abandoned or blighted building. Do not demolish such existing construction beyond indicated limits.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by the National Park Service. The National Park Service does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Verify that hazardous materials have been remediated before proceeding with building disassembly and demolition operations.

D. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, reconstruction video and templates.

1. Comply with requirements specified in Section 01 32 33 Photo Documentation.
2. Inventory and record the condition of items to be disassembled and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
3. Do NOT destroy elements that are to be replicated, reproduced, or duplicated. Selective disassembly of existing building elements that will be reproduced or duplicated in final Work, make permanent record of materials, and construction details required to make exact reproduction. Keep original and duplicated for quality control. Do not dispose of the original elements until approved by CO/COR.

3.2 SALVAGE TREATMENT AND INVENTORY PLAN

A. Prior to disassembly document existing conditions of the material element to be disassembled.

B. Tag material element with a non-staining label. Ensure label will not come loose. Do NOT damage material. Tagging nomenclature shall reflect the element system and develop an approach to tag all parts of a system such that they can be identified as parts of the same system.

C. Catalog and document existing location of material such that the material can be reinstalled in its EXACT location. Note material characteristics such as size, depth, shape and any other unique or defining characteristics.

D. Document location and material tag on keyed drawing. Include photo of salvaged material and retain an inventory of material descriptions. A digital documentation inventory is required.

E. Protect designated salvage elements from demolition operations until elements can be disassembled, salvaged, and reinstalled or stored.

3.3 PREPARATION

A. The structure has existing electrical systems. See Drawings and Electrical Specifications for requirements.

3.4 UTILITY SERVICES AND MECHANICAL/ELECTRICAL/PLUMBING SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, Temporarily Disconnected, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. National Park Service will arrange to shut off indicated services/systems when requested by General Contractor.
2. Arrange to shut off 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 disassembly/demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed or required to be removed/disconnected to perform the work.

    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. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    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.
    e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to National Park Service.
    f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.5 PROTECTION

A. Temporary Protection: 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 safety during selective disassembly/demolition area
    2. Provide temporary weather protection, during interval between selective disassembly/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 disassembly/demolition operations.
    4. Cover and protect any and all historic materials or systems that have not been removed.
    5. Comply with requirements for temporary enclosures, dust control, heating, and cooling

B. Temporary Shoring: Design, 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 disassembled and/or demolished.

    1. Strengthen or add new supports when required during progress of selective disassembly/demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.6 SELECTIVE DISASSEMBLY/DEMOLITION, GENERAL

A. General: Disassemble, demolish, and remove existing construction only to the extent required to lift the building and provide new construction as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective disassembly/demolition systematically, from higher to lower level. Complete selective disassembly/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. 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.
5. See requirements for Fire Watch in Section 01 35 91 Historic Preservation Treatment Procedures.
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 disassembly/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. Site Access and Temporary Controls: Conduct selective disassembly/demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Disassembled and Salvaged (Store) Items:

1. Label and Catalog Item according to approved Salvage Material Treatment and Inventory Plan
2. Clean salvaged items.
3. Pack or crate items after cleaning. Identify contents of containers.
4. Store items in a secure area until delivery to National Park Service.
5. Transport items to National Park Service’s storage area off-site.
6. Protect items from damage during transport and storage.

D. Disassembled, Salvaged, and Reinstalled Items:

1. Label and Catalog Item according to approved Salvage Material Treatment and Inventory Plan
2. Clean and repair items to functional condition adequate for intended reuse.
3. Pack or crate items after cleaning and repairing. Identify contents of containers.
4. Protect items from damage during transport and storage.
5. 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.

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

3.7 SELECTIVE DISASSEMBLE/DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. See Structural Drawings and Specifications.

B. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

C. Brick Masonry: Disassemble and salvage all loose brick in good condition at attic level and use as replacement brick to rebuilt base, if possible. This will be the existing brick color and size to match the veneer brick to.

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

E. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. See Roof Specifications for new roofing requirements.

1. Remove existing roof membrane, flashings, copings, and roof accessories.
2. Remove existing roofing system down to skip sheathing.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction and recycle or dispose of them according to Section 01 74 19 Construction Waste Management and Disposal.

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.

3.9 CLEANING

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

END OF SECTION 02 41 19

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
   1. New Foundation
   2. Mechanical Room Floor
   3. Basement Ventilation channels

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture.
   1. Concrete mix designs must be submitted a minimum of 15 days prior to the start of the work for engineer approval prior to the placement of concrete. Any adjustments in approved mix designs including changes in admixtures must be submitted in writing to the engineer and testing laboratory for approval prior to use. All mix design submittals shall clearly indicate the use and location of the particular mix.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement.
   1. The Contractor shall neither use nor reproduce any part of the Design Drawings as part of the Shop Drawings.
   2. At least one copy of each approved shop drawings shall be kept available in the Contractor's field office. Drawings not bearing "Reviewed – No Exceptions" or "Reviewed – Exceptions Noted" stamps by the Engineer shall not be kept on the job site.

1.3 INFORMATIONAL SUBMITTALS

A. Material certificates.

B. Material test reports.

C. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

1.4 QUALITY ASSURANCE

A. 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.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1.5 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.6 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1.

1. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 305.1-14.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
1. ACI 117.
2. ACI 301.
3. ACI 302
4. ACI 308.
5. ACI 360.

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Refer to drawings for locations where form liners are required.
1. Match historic and original concrete formwork appearance by providing formliners
a. Spec-Formliners, Inc., 1038 La Salle St., Santa Ana, CA 92701, “Plastic-Mo, 1224 Pattern, Historic Wood Grain.”
b. Or equal.

2.3 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.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

2.4 CONCRETE MATERIALS

A. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type I or Type III,.
2. Fly Ash: ASTM C 618, Class F or C.
3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
4. Blended Hydraulic Cement: ASTM C 595/C 595M, Type IS, portland blast-furnace slag, Type IP, portland-pozzolan, Type IL, portland-limestone, or Type IT, ternary blended cement.

B. Normal-Weight Aggregates: ASTM C 33/C 33M, graded.

1. Maximum Coarse-Aggregate Size: Not to be larger than one-fifth of the narrowest dimension between sides of forms, one-third the depth of slabs, nor three-fourths of the minimum clear spacing between individual reinforcing bars or bundles of bars.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

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

D. 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.

E. Water: ASTM C 94/C 94M and potable.

2.5 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class A, except with maximum water-vapor permeance of 0.01 perms.
1. Include manufacturer's recommended adhesive or pressure-sensitive tape.
2. Include polyethylene sheet, ASTM D 4397, not less than 10 mils thick.

2.6 CURING MATERIALS

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

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

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, dissipating.

F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

H. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

I. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.7 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

2.8 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. 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.

C. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

2.9 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Normal-Weight Concrete:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum W/C Ratio: 0.50.
3. Slump Limit: 4 inches (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.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
6. Exterior pavements prone to salting minimum Compressive Strength: 4500 psi at 28 days.

2.10 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.11 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, 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.
   a. Do not place concrete when temperatures are over 95 deg F.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Incorporate molded formwork liners, to the quantity necessary, to complete pouring, curing and setting operations so that a consistent appearance is created. Line up the adjacent forms to match form lines on adjacent liners.

D. Chamfer exterior corners and edges of permanently exposed concrete.

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. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

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

3.4 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

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.

1. Vertical Construction Joints: Joints shall be located within the central third of the span. Any concrete spilling over or through the bulkhead shall be removed at the completion of the pour. All surfaces of the concrete shall have reinforcing extending through the joint. Where not otherwise shown on drawings, provide #4 bars at 12 inch o.c. x 4’-6’ long.
2. Horizontal Joints: Horizontal construction joints other than those shown on the drawings will not be permitted unless approved by the Architect.
3. Joint Preparation: Forms shall be removed in time to permit roughening of construction joints of structural members by chipping and wire brushing to remove all loose and foreign material. The joints shall be dampened and the specified bonding compound applied. New concrete shall be placed after the rewettable bonding compound has dried or while the bonding grout or epoxy adhesive is still tacky. The anti-corrosive epoxy cementitious adhesive has a 20-hour open time.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated, or where not specifically shown, provide at maximum 15 feet or 36 times slab thickness, whichever is smaller, for slab on grade. Joints must be aligned and continuous. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks. Cut joints within 12 hours after finishing. Joints shall be filled with the specified epoxy joint filler once contraction has occurred.

D. Construction Joints in Slabs-on-Grade: Butt joint with dowels shall be provided. For details, refer to typical joint construction detail on the drawings.

E. 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.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

C. Cold-Weather Placement: Comply with ACI 306.1.

D. Hot-Weather Placement: Comply with ACI 305.1-14.

E. Slabs on Grade: Place concrete slabs on grade by the long strip cast method. Refer to ACI 302 and 360 for recommended methods of placement. Maximum outside diameter of pipe or conduit placed in slabs on grade shall be limited to one-third the thickness of the slab. The minimum concrete cover top and bottom shall be one-third the thickness of the slab. Separate parallel pipes to permit concreting between and below them.

F. Rainy Weather Placement: Concrete shall not be placed during rain. Sufficient coverings shall be provided and kept on hand for protection during rainstorms. Prior to placing concrete, wind speed and dew point shall be monitored and recorded to control plastic shrinkage cracking. The guidelines of CACI 318, ACI 305R, and ACI 306R as applicable, shall be followed. The contractor, at a minimum, shall provide wind screens as required to minimize this condition.

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 that exceed specified limits on formed-surface irregularities.

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

B. Historic Exterior Finish: To match historic finish.
   1. Match form liner dimensions to historic form line dimensions. Review existing conditions prior to demolition and document dimensions to be matched.
   2. Slope wood forms to mimic existing condition finish alignment. Review existing conditions prior to demolition and document dimensions to be matched.

C. 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 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

   1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
   2. Finish and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch.

C. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

   1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with CO/COR before application.

3.9 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures, for a minimum of 7 days. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed 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. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
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.

    a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a 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. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. With prior approval of the Engineer, as to method and procedure, all repairs of defective areas shall conform to ACI 301, Section 5.3.7.

3.11 FIELD QUALITY CONTROL

A. Special Inspections: The General Contractor will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
1. Confer with CO/COR to determine if Park will take on Special Inspections and Testing per Kentucky requirements.

END OF SECTION 03 30 00

SECTION 04 26 13

MASONRY VENEER

1.1 SUMMARY

A. Section Includes:

1. Construct faux, non-operable brick veneer chimneys
2. Single-wythe brick anchored to backup structure
3. Mortar materials.
4. Ties and anchors.
5. Embedded flashing.
6. Accessories.

B. Products Installed but not Furnished under This Section:

1. Steel shelf angles for supporting masonry veneer.

C. Submittals:

1. Exterior mockup requirements.
2. Section 07 62 00 "Sheet Metal Flashing and Trim" for sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Indicate sizes, profiles, coursing, and locations of special shapes.
2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

C. Samples for Initial Selection:

1. Clay face brick, in the form of straps of five bricks.

1.3 INFORMATIONAL SUBMITTALS

A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.

1. Submittal is for information only. Receipt of list does not constitute approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.

B. Material Certificates: For each type and size of the following:

1. Masonry units.

   a. Include data on material properties
   b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
   c. For exposed brick, include test report for efflorescence in accordance with ASTM C67/C67M.
   d. For surface-coated brick, include test report for durability of surface appearance after 50 cycles of freezing and thawing in accordance with ASTM C67/C67M
2. Cementitious materials. Include name of manufacturer, brand name, and type.
3. Mortar admixtures.
4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
5. Qualification Statements: For testing agency

C. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test in accordance with ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Installers: All masonry flashing installers must complete the International Masonry Institute Flashing Upgrade training course.
2. Testing Agency: Qualified in accordance with ASTM C1093 for testing indicated.

1.5 MOCKUPS

A. Sample chimney panel: Build sample panel to verify selections made under Sample submittals and to demonstrate aesthetic effects.

1. Build sample panel for each type of exposed unit masonry construction
2. Build sample panels facing south.
3. Where masonry is to match existing, build panel adjacent and parallel to existing surface.
4. Clean one-half of exposed faces of panels with masonry cleaner indicated.
5. Protect approved sample panels from the elements with weather-resistant membrane.
6. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Architect in writing.

   a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless such deviations are specifically approved by Architect in writing.

7. Build mockups for chimney panel in sizes approximately 48 inches (1219 mm) long by 36 inches (914 mm) high by full thickness, including face and backup wythes and accessories.

    a. Include a sealant-filled joint at least 16 inches (406 mm) long in [each] mockup.
    b. Include through-wall flashing installed for a 24-inch (610-mm) length in corner of exterior wall mockup approximately 16 inches (406 mm) down from top of mockup, with a 12-inch (305-mm) length of flashing left exposed to view (omit masonry above half of flashing).
    c. Include wood studs, sheathing, water-resistive barrier veneer anchors, flashing and weep holes in exterior masonry-veneer wall mockup.

8. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

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

D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 FIELD CONDITIONS

A. Protection of Masonry: During construction, cover tops of veneer, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

    1. Extend cover a minimum of 24 inches (610 mm) down face of veneer, and hold cover securely in place.

B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry. Immediately remove grout, mortar, and soil that come in contact with masonry.

    1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
    2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain exposed masonry units and mortar aggregate from single source.

B. For exposed masonry units and cementitious mortar components, obtain each color and grade from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects will be exposed in the completed Work

2.3 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units.
1. Initial Rate of Absorption: Less than 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested in accordance with ASTM C67/C67M.
2. Efflorescence: Provide brick that has been tested in accordance with ASTM C67/C67M and is rated "not effloresced."
3. Size (Actual Dimensions) to match existing in attic.
4. Application: Use where brick is exposed unless otherwise indicated.
5. Provide clay face brick matching color range, texture, and size of existing salvaged brickwork.

6. Colors: Match Salvaged samples

B. Face Brick, Sandmold Series, McNear Brick & Block, 1 McNear Brickyard Rd., San Rafael, CA 94901, 888-442-6811.

C. Tundra Brick: Hartford. Eldorado Stone, 3817 Ocean Ranch Boulevard, Ste 114
Oceanside, CA 92056 (800) 925-1491

D. Stone Selex, Reclaimed Brick Veneer, Church Street, Mississauga, Ontario, 416-593-8883, Info@stoneselex.com.

E. Or Equal.

2.4 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

1. Alkali content will not be more than 0.1 percent when tested in accordance with ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of Portland cement and hydrated lime containing no other ingredients.

D. Preblended Dry Mortar Mix: Packaged blend made from portland cement and hydrated lime and admixtures and complying with ASTM C1714/C1714M.

1. Preblended Dry Portland Cement Mortar Mix:

2. Preblended Dry Masonry Cement Mortar Mix

E. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch (6.4 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

F. Water: Potable.

2.5 TIES AND ANCHORS

A. General: Ties and anchors extend at least 1-1/2 inches (38 mm) into veneer but with at least a 5/8-inch (16-mm) cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
   1. Stainless Steel Wire: ASTM A580/A580M, Type 304
   2. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304

2.6 EMBEDDED FLASHING

A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:Delete first subparagraph below if plain (flat) sheet metal flashing is acceptable.
   1. Fabricate through-wall metal flashing embedded in masonry from [**stainless steel**] [**copper**], with ribs at 3-inch (76-mm) intervals along length of flashing to provide an integral mortar bond.

B. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."

C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.7 ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from **neoprene**

B. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

   1. Mortar Deflector: Strips

   2. Rainscreen Drainage Mat

C. Offset Angle Supports: Steel plate brackets anchored to structure, allowing continuous insulation behind shelf angle supporting veneer. Component and anchor size and spacing engineered by manufacturer.

D. Proprietary Acidic Masonry Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.8 MORTAR MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

   1. Do not use calcium chloride in mortar or grout.

2. Use portland cement-lime mortar unless otherwise indicated.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Use Type N unless another type is indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

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

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

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

3.2 INSTALLATION, GENERAL

A. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

B. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

C. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

D. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch (13 mm) or minus 1/4 inch (6.4 mm).
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (13 mm).
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6.4 mm) in a story height or 1/2 inch (13 mm) total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 ft. (6.4 mm in 3 m), or 1/2-inch (13-mm) maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 ft. (3.2 mm in 3 m), 1/4 inch in 20 ft. (6.4 mm in 6 m), or 1/2-inch (13-mm) maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 ft. (6.4 mm in 3 m), 3/8 inch in 20 ft. (10 mm in 6 m), or 1/2-inch (13-mm) maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 ft. (3.2 mm in 3 m), 1/4 inch in 20 ft. (6.4 mm in 6 m), or 1/2-inch (13-mm) maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 ft. (6.4 mm in 3 m), 3/8 inch in 20 ft. (10 mm in 6 m), or 1/2-inch (13-mm) maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 ft. (6.4 mm in 3 m), or 1/2-inch (13-mm) maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3.2 mm), with a maximum thickness limited to 1/2 inch (13 mm).

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: To match historic and sample in-situ in attic.

C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

3.5 MORTAR BEDDING AND JOINTING

A. Lay **soli**d masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

3.6 ANCHORED MASONRY VENEERS

A. Anchor masonry veneers to wall framing with masonry-veneer anchors to comply with the following requirements:

1. Fasten screw-attached anchors through sheathing to wall framing with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
2. Embed tie sections in masonry joints.
3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.

B. Provide not less than 2 inches (51 mm) of airspace between back of masonry veneer and face of sheathing

1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace. Do not attempt to trowel or remove mortar fins protruding into airspace.

3.7 FLASHING, WEEP HOLES, AND VENTS

A. Install flashing as follows unless otherwise indicated:
1. Extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 8 inches (203 mm); with upper edge tucked under **water-resistive barrier** lapping at least 4 inches (102 mm)

B. Install reglets and nailers for flashing and other related construction where they are indicated to be built into masonry.

C. Install weep holes in veneers in head joints of first course of masonry immediately above embedded flashing.

3.8 FIELD QUALITY CONTROL

A. Inspections: Special inspections in accordance with Level 2 in TMS 402.

B. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, in accordance with ASTM C780.

C. Mortar Test (Property Specification): For each mix provided, in accordance with ASTM C780. Test mortar for mortar air content and compressive strength.

3.9 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

3.10 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

1. Crush masonry waste to less than 4 inches (102 mm) in each dimension.
2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste.

C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 04 26 13

SECTION 06 01 20 – WOOD RESTORATION

PART 1 – GENERAL

1.1 This Section includes the following as pertaining to architectural plan and elevation drawings:

A. Base Bid: General Contractor to provide all labor and materials to:

1. Patch and repair existing exterior and some interior woodwork: siding, eaves, trim, thresholds, casings

1.2 RELATED SECTIONS

A. Section 02 41 19 – Selective Disassembly, Salvage and Protection

B. Section 06 10 00 – Rough Carpentry

C. Section 07 92 00 – Joint Sealants

E. Section 09 91 13 – Exterior Painting

1.3 REFERENCES

A. National Park Service Historic Preservation Briefs

1. No 10 – Exterior Paint Problems on Historic Woodwork
2. No. 18 – Rehabilitating Interiors in Historic Buildings

B. ASTM C 1036 Standard Specification for flat glass

1.4 SUBMITTALS

A. Successful General Contractor to submit qualifications of woodworkers for work of this section. Restoration workers shall be a domestic company, which has been in the Historical Wood Restoration business for a minimum of 10 years. Restoration workers must demonstrate the following:

1. A history for successfully providing historic wood restoration services, including installation of replicating wood detail, for a minimum of 5 historic projects including civic, commercial and / or institutional properties of similar size and scope to this project.
2. That the company employs skilled full-time restoration personnel. Successful General Contractor shall submit resumes of lead personnel, including their experience level, who will be responsible for the coordination of the restoration and installation work on this project.

B. Procedures – Provide written procedures for work in this section.

C. Mock-Up: Perform restoration of each type of wood trim, following requirements of this section to demonstrate materials and methods intended to be used in the finished work. Mockup shall demonstrate Dutchman repair, patching, and consolidation. Obtain Architect's approval of mock-up before proceeding with restoration of remaining woodwork. Protect approved mock-up until completion of all work. Approved mock-up shall represent the minimum acceptable standard for wood restoration work.

D. Product Data: For each type of wood include the following:

1. Recommendations for maintenance and cleaning of surfaces.

E. Shop Drawings: For salvaged wood required. Include information not fully detailed elsewhere:

1. Layout and installation details, including anchors.
2. Elevations at ¼ inch = 1 foot scale.
3. Hardware, including operators.

1.5 DELIVERY, STORAGE, & HANDLING

A. Comply with the storage and delivery requirements of Division 01 – 3.3 Contractor Use of Site.

B. Store salvaged wood in a dry location, under cover, and protected from the weather.

1.6 PROJECT CONDITIONS

A. Safety: The existing paint on the woodwork was tested and has not been found to contain lead in the paint. Windows were not tested and it is assumed contain hazardous containing materials. See the Hazaradous Material Reports in the Appendix.

B. Take all necessary precautions to ensure health and safety of all persons engaged in removing and disposing of paint or other substances containing lead or asbestos and handle and dispose of all residues generated from removal to avoid contamination of buildings, soils, bodies of water, water table, atmosphere, and other environmental elements and in compliance with all applicable laws and regulations.

1.7 QUALITY ASSURANCE

A. Source Limitations: Obtain restoration services through one source from a single Wood Restoration Contractor.

B. Use only workers who are qualified under 1.4.A.

1.8 WARRANTY

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

B. Special Warranty: submit a written warranty, executed by General Contractor, agreeing to repair or replace components that fail in materials or workmanship for a period of three years. Failures include, but are not limited to, the following:

1. Structural failures, including excessive deflection, water leakage, air infiltration, or condensation.
2. Deterioration of finishes and other materials beyond normal weathering.

C. Warranty Period for general materials and workmanship is one year.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Structural Adhesive Putty: Structural Adhesive Putty: A light adhesive putty system consisting of two (2) components: resin paste and hardener paste. After mixing, blend should harden into a lighter-than-water, non-shrinking, tough adhesive mass with high dimensional stability, chemical, water, heat, and weather resistance. Product shall have no-slump paste consistency.

1. Wood Epoxy by Abatron, Inc.
2. Flex-Tech HV by Advanced Repair Technologies
3. PRG-JP-146 by PRG Inc. Rockville MD

C. Paint Removers: Alkali based. These paint removers are to be applied to non lead containing paint. Refer to Lead Paint abatement specification for proper removal of lead based paints.

1. Prosoco: Fast Acting Stripper.
2. Soy Get Stripper.
3. or other product with prior approval.

D. Strippers: Strippers shall comply with all environmental regulations and good practices.

1. No Methylene Chloride shall be used on site.
2. No Sodium Hydroxide shall be used on site.
3. Use Benzyl Alcohol

2.4 TOOLS: These tools and methods are intended for non lead containing paints. See the lead based paint abatement specification for proper procedures and handling.

A. Scrapers

1. Putty Knife: one to six inches with beveled edge.

2. Paint Scrapers: one inch five-sixteenths to three and a half inches with replaceable blades

B. Sanding

1. Minimum 100 grit aluminum oxide sandpaper or rectangular sponge with abrasive aggregate.

C. Mechanical Abrasive Equipment

1. Orbital Palm Sanders: with minimum 100 grit aluminum oxide sandpaper

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrate before installation.

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

1. Wood frame walls shall be dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (75mm) of corner.

3.2 WOOD PATCHING

A. Remove rotted wood down to sound substrate.

B. Ensure wood is clean and dry.

C. Apply wood epoxy according to manufacturer's instructions. Once dry, sand surface smooth to match existing adjacent surfaces and profiles.

D. Ensure patch is fully cured before priming and painting.

3.4 CLEANING

A. Clean surfaces immediately after installation. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing sealants, dirt, and other substances.

3.5 PROTECTION

A. Protect wood from damage or deterioration until the time of Project Completion.

END OF SECTION 06 01 20

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Wood blocking and nailers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

1.3 INFORMATIONAL SUBMITTALS

A. 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.

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

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Expansion anchors.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent for 2-inch nominal thickness or less, no limit for more than 2-inch nominal thickness unless otherwise indicated.

C. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

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

1. Preservative Chemicals: Acceptable to the National Park Service and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

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

D. Application: Treat items indicated on Drawings

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, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant

progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.

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

1. Framing supporting brick chimneys.

2.4 DIMENSION LUMBER FRAMING

A. Sistering Framing: No. 1 grade or better.

1. Application: Sistering framing to walls and floor joists.
2. Species:
   a. Match existing wood species
3. Compliance with APA standard.

2.5 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber of any species.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine; No. 2 grade; SPIB.
2. Eastern softwoods; No. 2 Common grade; NeLMA.
3. Northern species; No. 2 Common grade; NLGA.
4. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153.

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

C. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

2.7 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.

B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

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

C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

D. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.

E. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

F. Do not splice structural members between supports unless otherwise indicated.

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

H. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

I. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

3.2 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 00

SECTION 06 16 00

SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall sheathing.
2. Roof sheathing.

1.2 ACTION SUBMITTALS

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

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS

A. Plywood: DOC PS 1 or DOC PS 2 unless otherwise indicated.

B. Oriented Strand Board: DOC PS 2.

2.2 WALL SHEATHING

A. Plywood Wall Sheathing: Exposure 1, Structural I sheathing.

B. Oriented-Strand-Board Wall Sheathing: Exposure 1, Structural I sheathing.

2.3 ROOF SHEATHING

A. Plywood Roof Sheathing: Exposure 1, Structural I sheathing.

B. Oriented-Strand-Board Roof Sheathing: Exposure 1, Structural I sheathing.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

2.5 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 ASTM D 3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

3.2 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.

B. Fastening Methods: Fasten panels as indicated below:

1. Wall and Roof Sheathing:

a. Nail to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels.
b. Screw to cold-formed metal framing.
c. Space panels 1/8 inch apart at edges and ends.

END OF SECTION 06 16 00

SECTION 06 40 13

EXTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Siding:
      a. Disassemble and salvage wood siding at walls and cupola walls.
      b. Reinstall best quality historic full units of wood siding on the west façade (front face).
      c. Reinstall on other facades best quality remaining historic full units of wood siding mixed in with new full units of wood siding.
   2. Architectural Wood Trim:
      a. Disassemble and salvage wood trim, soffits, verge boards, and eaves.
      b. Repair and reinstall best quality wood trim, soffits, verge boards, and eaves on the west façade (front face).
      c. Reinstall on other facades best quality remaining historic wood trim, soffits, verge boards, and eaves.
      d. New wood trim, soffits, verge boards and eaves, as required.
   3. New Finial at Cupola.
   4. New gutter and downspout attachment substructure, fascia, and eaves
   5. Shop priming.

B. Quantities:
   1. All quantities below are approximate. Coordinate with drawings and with visual inspection.
      a. Siding Replacement=53% of existing siding or 1,035 S. F.
      b. Fascia Replacement=16 L.F.
      c. Side Trim Replacement = 47 L.F.
      d. Quarter Round Trim Replacement = 47 L.F.
      e. Miscellaneous Replacements: soffits, verge boards, eaves =15%
      f. New soffits as required to hang new gutters =

C. Related Requirements:

   1. Section 01 32 33 – Photo Documentation

   2. Section 01 35 91 – Historic Preservation Treatment Procedures

   3. Section 02 41 19 – Selective Disassembly and Demolition

   4. Section 07 92 00 – Joint Sealants

   5. Section 09 91 13 - Painting

1.2 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections, to ensure that exterior architectural woodwork can be supported and installed as indicated.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Convene meeting at the site prior to ordering materials to review scope of work and verify construction details, with the following attendees:
   1. General Contractor
   2. Installing Contractor
   3. Contacting Officer's Representative
   4. Manufacturer's Representative

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Wood-Preservative Treatment – for wood trim, soffits, verge boards, and eaves

   1. Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
   2. Indicate type of preservative used and net amount of preservative retained.
   3. Include chemical-treatment manufacturer's written instructions for finishing treated material and manufacturer's written warranty.

C. Shop Drawings:

   1. Include dimensioned plans, elevations, sections, and attachment details.

D. Samples: For each exposed product and for each color and finish specified.

   1. Size: 12" lengths
      a. Siding
      b. Wood Trim Edge Boards and Quarter Round
      c. Wood for dutchman or replacement of: Siding, wood trim, soffits, verge boards, and eaves.

1.5 INFORMATIONAL SUBMITTALS

A. Procedures – Provide written procedures for work in this section.

B. Qualifications Data: Submit resumes, project descriptions and narrative. Contractor shall submit resumes for foreman, all workers, and subconsultant. The subcontractor for this work shall have demonstrated experience and three (3) related projects in the last 10 years. Projects shall be of same size or larger with similar scope and historic designation. The Contracting Officer/Contracting Officer Representative reserves the right to approve or disapprove the use of the personnel contingent upon their experience.

1. Superintendent and Foreman for work in this section assigned to this project shall each have relevant experience with this type of repair work. References of projects they have completed shall be submitted to the Contracting Officer/Contracting Officer Representative by the successful bidder. The project Superintendent and Foreman assigned to this project shall not be changed throughout the duration of the work without written request to and consent of the Contracting Officer/Contracting Officer Representative.
2. Installer qualifications: Employ only subcontractors experienced in repair and restoration of architectural woodwork. Provide written and photographic documentation of restoration skills.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications: Successful General Contractor to submit qualifications of woodworkers for work of this section. Restoration workers shall be a domestic company, which has been in the Historical Wood Restoration business for a minimum of 10 years. Restoration workers must demonstrate the following:
   1. A history for successfully providing historic wood restoration services, including installation of replicating wood detail, for a minimum of 5 historic projects including civic, commercial and / or institutional properties of similar size and scope to this project.
   2. That the company employs skilled full-time restoration personnel. Successful General Contractor shall submit resumes of lead personnel, including their experience level, who will be responsible for the coordination of the restoration and installation work on this project.

C. Warranty Period for general materials and workmanship is one year.

D. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
   1. Perform restoration of each type of wood trim, following requirements of this section to demonstrate materials and methods intended to be used in the finished work. Mockup shall demonstrate Dutchman repair, patching, and consolidation. Obtain CO/COR approval of mock-up before proceeding with restoration of remaining woodwork.
   2. Protect approved mock-up until completion of all work. Approved mock-up shall represent the minimum acceptable standard for wood restoration work. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless CO/COR specifically approves such deviations by Change Order.
   3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with Architectural Woodwork Standards, Section 2.

B. Comply with the storage and delivery requirements of Division 01 – 3.3 Contractor Use of Site.

C. Store salvaged wood in a dry location, under cover, and protected from the weather.

1.8 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation of exterior architectural woodwork 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.

B. Field Measurements: Where exterior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where exterior architectural woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 SAFETY

A. The existing paint on the woodwork was tested and has not been found to contain lead in the paint. See the Lead based Paint and Hazardous Materials Specifications, and reports contained in the Project Manual.

B. Take all necessary precautions to ensure health and safety of all persons engaged in removing and disposing of paint or other substances containing lead or asbestos and handle and dispose of all residues generated from removal to avoid contamination of buildings, soils, bodies of water, water table, atmosphere, and other environmental elements and in compliance with all applicable laws and regulations.

1.10 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Siding: 20 sq. ft. of each size and type.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL WOODWORK REPAIRS

A. Structural Adhesive Putty: Structural Adhesive Putty: A light adhesive putty system consisting of two (2) components: resin paste and hardener paste. After mixing, blend should harden into a lighter-than-water, non-shrinking, tough adhesive mass with high dimensional stability, chemical, water, heat, and weather resistance. Product shall have no-slump paste consistency.
   1. Wood Epoxy by Abatron, Inc.
   2. Flex-Tech HV by Advanced Repair Technologies
   3. PRG-JP-146 by PRG Inc. Rockville MD

B. Dutchman Repairs and new:
   1. Wood Species to Match existing.

2.2 ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of exterior architectural woodwork indicated for construction, finishes, installation, and other requirements.

   1. Provide certifications:

2.3 EXTERIOR STANDING AND RUNNING TRIM

A. Architectural Woodwork Standards Grade:

B. Backout or groove backs of flat trim members, and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

C. Wood Species: Select grade to match existing.

2.4 EXTERIOR WOOD SIDING FOR OPAQUE FINISH

A. Architectural Woodwork Standards Grade:

B. Wood Species: Select grade to match historic.

2.5 WOOD MATERIALS

A. Exterior standing and Running Trim for Opaque Finish
   1. Architectural Woodwork Standards Grade: Custom
   2. Wood Species: To match historic species.
   3. Wood Moisture Content: 9 to 15 percent.

B. Exterior Frames and Jambs for Opaque Finish.
   1. Architectural Woodwork Standards Grade: Custom.

2. Wood Species: to Match Historic Species.
3. Wood Moisture Content: 9 to 15 percent.

2.6 PRESERVATIVE-TREATED-WOOD MATERIAL

A. Preservative-Treated-Wood Materials: Provide with water-repellent preservative treatment complying with AWPA N1 (dip, spray, flood, or vacuum-pressure treatment).

2.7 FIRE-RETARDANT-TREATED WOOD MATERIAL

A. Fire-Retardant-Treated Wood Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products according to test method indicated by a qualified testing agency.

1. Use treated materials that comply with requirements of the Architectural Woodwork Standards for the grade specified. Do not use materials that are warped, discolored, or otherwise defective.
2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

B. Exterior Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E84 after being subjected to accelerated weathering according to ASTM D2898, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Kiln-dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
2. For items indicated to receive a stained, transparent, or natural finish, use organic resin chemical formulation.
3. Mill lumber after treatment within limits set for wood removal that do not affect listed fire-test-response characteristics, using a woodworking shop certified by testing and inspecting agency.
4. Mill lumber before treatment and implement procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.

2.8 FASTENERS

A. General: Provide fasteners of size and type indicated, acceptable to authorities having jurisdiction, and that comply with requirements specified in this article for material and

manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.

1. For pressure-preservative-treated wood, use stainless steel fasteners.

2.9 MISCELLANEOUS MATERIALS

A. Blocking, Shims, and Nailers: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

1. Wood-Preservative Treatment: By pressure process, AWPA U1; Use Category UC3b.
   a. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

2.10 FABRICATION

A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

B. Fabricate exterior architectural woodwork to dimensions, profiles, and details indicated.

1. Ease edges to radius indicated for the following:
   a. Edges of Solid-Wood (Lumber) Members: 1/16 inch (1.5 mm) unless otherwise indicated.
   b. Edges of Rails and Similar Members More Than 3/4 Inch (19 mm) Thick: 1/8 inch (3 mm).

C. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.

1. Disassemble components only as necessary for shipment and installation.
2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.
3. Notify CO seven days in advance of the dates and times exterior architectural woodwork fabrication will be complete.
4. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled.
   a. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting.
   b. Verify that parts fit as intended, and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.

2.11 SHOP PRIMING

A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.

B. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork.

C. Exterior Architectural Woodwork for Opaque Finish: Shop prime all surfaces with one coat of wood primer as specified in Section 099113 "Exterior Painting."

D. Finish exterior architectural woodwork at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.

E. Preparation for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of exterior architectural woodwork. Apply two coats to end-grain surfaces.

F. Opaque Finish: Comply with Section 09 91 13 "Exterior Painting."

PART 3 - EXECUTION

3.1 PREPARATION

A. Wood Siding and Wood Trim Board Repairs:

1. During Disassembly, carefully remove siding and trim. See structural drawings and architectural details.
2. Select best condition and full length historic and/or original wood units for reinstallation on West Façade. Remaining units that need consolidation or replacement are to be placed in the following order of Good Condition: South, North and then East façade.
3. Conduct Consolidation and replacement of units exhibiting deterioration or damage, as follows:
   a. If 50% or more of the unit has wood damage, is punky or deteriorated replace the board in its entirety with new unit, matching the historic unit.
   b. If less than 50% of the board is damaged, conduct consolidation repairs. No more than 24” of original board can be remaining or have dutchman.
   c. When installing siding, stagger joints so no two seams line up to adjacent boards above or below.
   d. Stagger nailing of siding boards and make sure nails are concealed below wood unit above.
3. Before installation, condition exterior architectural woodwork to average prevailing humidity conditions at Project site.
4. Before installing exterior architectural woodwork, examine shop-fabricated work for completion, and complete work as required, including removing packing and backpriming concealed surfaces.

3.2 Wood Trim Board Repairs

1. Provide new trim boards and quarter rounds where missing. See structural drawings and architectural details.

3.3 INSTALLATION

A. Grade: Install exterior architectural woodwork to comply with same grade as item to be installed.

B. Assemble exterior architectural woodwork, and complete fabrication at Project site to the extent that it was not completed during shop fabrication.

C. Install exterior architectural woodwork level, plumb, true in line, and without distortion.

1. Shim as required with concealed shims.
2. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

D. Standing and Running Trim:

1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.

2. Repaired dutchman-type pieces to original woodwork shall stagger the joints in adjacent and related members above and below to the greatest extent possible. It is understood that there will be shorter units due to required repairwork.
3. Do not use pieces less than 36 inches (900 mm) long, except where shorter single-length pieces are necessary.
4. Scarf running joints and stagger in adjacent and related members.

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

F. Preservative-Treated Wood Materials: Where field cut or drilled, treat cut ends and drilled holes according to AWPA M4.

G. Fire-Retardant-Treated Wood Materials: Install fire-retardant-treated materials to comply with chemical treatment manufacturer's written instructions.

H. Anchor exterior architectural woodwork to anchors or blocking built in or directly attached to substrates. Nailing to new plywood sheathing is preferred.

1. Secure with countersunk, concealed fasteners and blind nailing.
2. Use fine finishing nails for exposed fastening, countersunk and filled flush with exterior architectural woodwork.
3. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced and with adjacent rows staggered.
4. For shop-finished items, use filler matching finish of items being installed.
   a. Countersink nail heads, fill flush, and sand filler.

I. Touch up finishing work specified in this Section after installation of exterior architectural woodwork.

1. Fill nail holes with matching filler where exposed.
2. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

J. Inspections: Provide inspection of installed Work through AWI's Quality Certification Program certifying that woodwork, including installation, complies with requirements of the Architectural Woodwork Standards for the specified grade.

1. Inspection entity is to prepare and submit report of inspection.

3.4 REPAIR

A. Repair damaged and defective exterior architectural woodwork, as described, to eliminate functional and visual defects and to result in exterior architectural woodwork being in compliance with requirements of the Architectural Woodwork Standards for the specified grade.

B. Where not possible to repair, replace defective woodwork.

3.5 CLEANING

A. Clean exterior architectural woodwork on exposed and semi-exposed surfaces.

END OF SECTION 06 40 13

SECTION 07 31 29

WOOD SHINGLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood roof shingles.
2. Underlayment materials.
3. Metal flashing and trim.

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood furring.

1.2 DEFINITIONS

A. Roofing Terminology: See ASTM D1079 for definitions of terms related to roofing Work in this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Contractor shall arrange conference at project site. General Contractor, installation contractor, project manager, site foreman, Architect and Using Agency's Representative shall be in attendance. If the work impacts other trades, a representative from those contractors shall also be in attendance.

2. Convene minimum one week prior to commencing work of this section.

3. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review special roof details.

5. Review requirements for insurance, warranties, and certificates if applicable.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Wood roof shingles.

2. Underlayment materials.
3. Metal flashing and trim.

B. Shop Drawings: For metal flashing and trim.

C. Samples: For each exposed product, in sizes indicated.

1. Wood Roof Shingles: Full size.

D. Samples for Initial Selection: For each type of wood product indicated.

1. Include Samples of accessories involving color selection.

E. Samples for Verification: For the following products, in sizes indicated:

1. Wood Roof Shingles: Full size.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Research Reports: For wood products, from an agency acceptable to authorities having jurisdiction indicating that product is suitable for intended use under applicable building codes.

C. Sample Warranty: For manufacturer's materials warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For wood products to include in maintenance manuals.

B. Materials warranties.

C. Roofing Installer's warranty.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Wood Roof Shingles: 20 sq. ft. of each size and type, in unbroken bundles.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: CSSB member.

B. Qualifications Data: Successful bidder shall submit resumes for foreman and all workers. The contractor for this work shall have at least ten (10) years' experience and four (4) relevant projects within that period complete at the time of bidding. Projects shall be of same size or

larger with similar scope and historic experience. The Architect reserves the right to approve or disapprove the use of the personnel contingent upon their experience.

1. The Contractor for this work shall have at least ten years' experience with similar work on historic buildings. Successful Contractor shall submit a list of at least four similar, complete projects to the Architect including a name of a person (Using Agency, Manager, Architect, etc.) who may be contacted for information concerning referenced projects. Contractor will be expected to be well versed with historic construction, methodologies, conditions, and solutions.

2. Superintendent and foreman for work in this section assigned to this project shall each have a minimum of ten (10) years' experience with this type of repair work. References of projects they have completed shall be submitted to the Architect by the successful bidder. The project superintendent and foreman assigned to this project shall not be changed throughout the duration of the work without written request to and consent of the Architect.

3. Installer qualifications: Employ only workers experienced in restoration and repairing historic roofs and specialize in cedar shake applications with a minimum of five (5) years project experience and provide written and photographic documentation of restoration skills.

C. Contractor and all workers shall undergo one-hour on-site training session with CAAB regional roofing representative prior to commencing work. Provide 72 hours' notice to Architect and Using Agency for when this training will occur, so they can be in attendance. This training is a free service provided by the CSSB. Furnish certificate to Architect to confirm this training has been undertaken.

1. Tony Hyatt, CSSB District Manager – (608) 609-6653

a. Email: tony.hyatt@cedarbureau.org

D. Grading Agency Qualifications: An independent testing and inspecting agency recognized by authorities having jurisdiction as qualified to label wood products for compliance with referenced grading rules.

E. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockups for wood products including accessories.
   a. Size: 48 inches long by 48 inches wide
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless CO specifically approves such deviations in writing.
3. Mock up shall include underlayment and flashing installations.

F.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture in accordance with manufacturer's written instructions.

B. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double-stack rolls.

C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing Work is not in progress.

D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit product installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.

1. Install self-adhering, polymer-modified bitumen sheet underlayment within the range of ambient and substrate temperatures recommended in writing by manufacturer.

1.11 WARRANTY

A. Materials Warranty: Manufacturer's warranty administered by CSSB and on CSSB's standard form in which manufacturer agrees to repair or replace CSSB-labeled products that fail in materials within specified warranty period. Material failures include manufacturing defects that result in leaks.

1. Materials Warranty Period: Twenty-five years from date of Substantial Completion.

B. Roofing Installer's Warranty: On warranty form at end of this Section, signed by Installer, in which Installer agrees to repair or replace installed products that fail in materials or workmanship within specified warranty period.

1. Warranty Period: **Five** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of product from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Exterior Fire-Test Exposure: Provide roofing materials identical to those of assemblies tested for fire resistance in accordance with ASTM E108 or UL 790 by Underwriters Laboratories or

another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

1. Wood Products: Class B
   a. Fire-Retardant Treatment: Exterior-type pressure treatment complying with AWPA C1, AWPA U1 and AWPA T1.
   b. Accelerated Weathering: Subject test specimens to ASTM D2898 Method A before testing.
   c. Identification: Attach a label to each bundle of wood products; include identification mark of testing agency acceptable to authorities having jurisdiction and identify manufacturer, chemical treatment, method of application, purpose of treatment, and warranties available.

B. Decay Resistance: Provide wood products treated in accordance with AWPA U1 and AWPA T1, chromated copper arsenate (CCA) pressure treatment; with a minimum of 0.40-lb/cu. ft. retention.

1. Identification: Attach a label to each bundle of wood products; identify manufacturer, chemical treatment, method of application, purpose of treatment, and warranties available.

C. Grading Rules: Provide wood products that comply with CSSB grading rules for products indicated.

1. Identification: Attach a label to each bundle of wood products that identifies manufacturer, type of product, grade, dimensions, and identification mark of grading agency acceptable to authorities having jurisdiction.

2.3 WOOD ROOF SHINGLES

A. Cedar Shingles: Smooth-sawn western red cedar shingles.

1. Grade: No. 1 Blue Label sawn and kiln dried, with starter courses of No. 1.
2. Size: 18” lengths

2.4 UNDERLAYMENT MATERIALS

A. Felt: Asphalt-saturated organic felts, nonperforated and complying with the following:

1. ASTM D226/D226M: Type II (30# FELT).
2. Use as underlayment (2 layers, staggered)

B. For Eave and Valley Protection:
   1. Self-Adhering, Polymer-Modified Bitumen Sheet: ASTM D1970/D1970M, minimum 40-mil- (1.0-mm-)
      a. Grace Ice and water Shield or equal.
      b. 3 ft. width minimum.

C. For Ridge Ventilation:

1. Roll Ridge Vent with weather and insect infiltration protection.
   a. 10.5” width
   b. .625 inch thickness

2.5 ACCESSORIES

A. Elastomeric Flashing Sealant: ASTM C920, Type S, Grade NS, one-part, non-sag, elastomeric polymer sealant; of class and use classifications required to seal joints and remain watertight; recommended in writing by manufacturer for installation of flashing systems.

B. Drainage Mat: Manufacturer's standard, compression-resisting, three-dimensional, nonwoven, entangled filament, nylon mat designed to permit air movement and to drain incidental moisture by gravity.

   1. Cedar Breather or equal.
   2. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

C. Underlayment Nails: Aluminum or, stainless steel, wire nails with low-profile metal or plastic caps, 1-inch- (25-mm-) minimum diameter.

   1. Ridge and field nails to be long enough to penetrate sheathing, ¾” (type each).

2.6 METAL FLASHING AND TRIM

A. Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."

   1. Sheet Metal: Corrosion resistant sheet metal, painted Anodized aluminum, 26 gauge.

B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item unless otherwise specified in this Section or indicated on Drawings.

PART 3 - EXECUTION

3.1 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.

   1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
   2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provisions have been made for flashings and penetrations through wood roofing.
   3. Verify that vent stacks and other penetrations through roofing are installed and securely fastened.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

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

3.2 INSTALLATION OF WOOD ROOF SHINGLES

A. Install wood roof shingles in accordance with manufacturer's written instructions and recommendations in CSSB's "New Roof Construction Manual" and NRCA's "The NRCA Roofing Manual: Steep-Slope Roofing Systems."

B. Install Polymer-Modified Bitumen Sheet at eaves, minimum 3’ up from edge. Install Polymer-Modified Bitumen Sheet at all valley’s. 1.5’ each side.

C. Install roofing felt over entire roof deck. Felt should extend ¼” beyond edge of roof deck. Overlap layers at least 4” working toward the ridge.

D. Install drainage mat perpendicular to roof slope in parallel courses, butting edges and ends to form a continuous layer, and fasten to roof deck. Install with dimples down to present the flat side as the nailing course. Install following manufacturer’s instructions.

E. Install wood-shingle starter course along lowest roof edge.

1. Install first course double layer with joints offset a minimum of 1-1/2 inches (38 mm).
   a. Extend 1-1/2” inches (38 mm) over fascia.
   b. Extend 1-1/2” inches (38 mm) over rake edge.
2. Install remaining courses, single layer with joints offset a minimum of 1-1/2 inches (38 mm).

F. Install first course of wood roof shingles directly over starter course and in continuous straight-line courses across roof deck. Install second and succeeding courses of wood roof shingles in continuous straight-line courses across roof deck.

1. Extend 1-1/2 inches (38 mm) over rake edge.
2. Offset joints between shingles in succeeding courses a minimum of 1-1/2 inches (38 mm). Do not align vertical joints in alternate courses.
3. Space shingles a minimum of 1/4 inch (6 mm) and a maximum of 3/8 inch (10 mm) apart.
4. Fasten each shingle with two nails spaced 3/4 to 1 inch (19 to 25 mm) from edge of shingle and 1-1/2 to 2 inches (38 to 51 mm) above butt line of succeeding course. Drive fasteners flush with top surface of shingles without crushing wood.
5. Maintain weather exposure of 5 inches (127 mm) for 16-inch- (406-mm-)

G. Aluminum Valleys: Apply flashing with direct contact with the underside of the shingle and on top of the drainage mat and felt. Maintain uniform 22” wide width of exposed open valley

H. At Ventilated Roof Ridge, install nail-gunnable ridge vent roll. Product to include weather and insect infiltration protection. 5/8” in thick, 10-1/2” wide.

I. At unventilated ridges and hips, install concealed strip of self-adhering, polymer-modified bitumen sheet underlayment over apex shingles and below ridge units.

3.3 INSTALLATION OF METAL FLASHING AND TRIM

A. Install metal flashings and other sheet metal to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."

1. Install metal flashings in accordance with recommendations for wood roofing in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof Systems."

B. Apron Flashings: Extend lower flange over and beyond each side of downslope wood roofing and up the vertical surface.

C. Step Flashings: Install with a headlap of 3 inches (76 mm) and extend over underlying wood roofing and up the vertical face. Install with lower edge of flashing just upslope of, and concealed by, butt of overlying wood roofing. Fasten to roof deck only.

D. Open-Valley Flashings: Install centered in valleys, lapping ends at least 8 inches (203 mm) in direction that sheds water. Fasten upper end of each length to roof deck beneath overlap.

1. Adhere minimum 9-inch- (229-mm-) wide strip of self-adhering, polymer-modified bitumen sheet to metal flanges and to underlying self-adhering, polymer-modified bitumen sheet. Place strips parallel to and over flanges so that they will be just concealed by installed roofing.
2. Provide a closure at the end of the inverted-V profile of the valley metal to minimize water and ice infiltration.

E. Rake Drip Edges: Install over underlayment materials and fasten to roof deck.

F. Eave Drip Edges: Install below underlayment materials and fasten to roof deck.

G. Pipe Flashings: Form flashing around pipe penetrations and wood roofing. Fasten and seal to wood roofing.

END OF SECTION 07 31 29

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Custom flashing and trim fabrications, made from the following:

1. Sheet metal materials.
2. Underlayment.
3. Copings
4. Valley flashings
5. Miscellaneous materials.

B. Related Requirements:

1. Section 02 41 19 – Selective Disassembly, Salvage and Protection

2. Section 04 26 13 - Brick Veneer

3. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking.

4. Section 06 40 13 – Exterior Architectural Woodwork

5. 07 31 29 – Wood Shingles

6. 07 92 00 – Joint Sealants

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Convene meeting at the site prior to ordering materials to review scope of work and verify construction details, with the following attendees:
1. General Contractor
2. Installing Contractor
3. Contacting Officer’s Representative
4. Manufacturer’s Representative

B. Review the following:
1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Plans, elevations, sections, and attachment details.
2. Fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Identification of material, thickness, weight, and finish for each item and location in Project.
4. Details for forming, including profiles, shapes, seams, and dimensions.
5. Details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Details of roof-penetration flashing.
7. Details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.

C. Samples: For each exposed product and for each color and texture specified, 12 inches (300 mm) long by actual width.

D. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

E. Samples for Verification: Actual sample of finished products for each type of exposed finish for sheet metal and other metal accessories.

1. Sheet Metal Flashing and Trim: Include finished seam with required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Anodized Aluminum Samples: Samples to show full range to be expected for each color required.

1.4 INFORMATIONAL SUBMITTALS

A. Certificates: For each type of coping and roof edge flashing that is ANSI/SPRI/FM 4435/ES-1 tested.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Research Reports: For copings and roof edge flashing, from ICC-ES showing compliance with ANSI/SPRI/FM 4435/ES-1.

D. Qualification Statements: For fabricator.

E. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Entity that employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications: Entity that employs a supervisor who is an NRCA ProCertified Roofing Foreman or installers who are NRCA ProCertified Architectural Metal Flashings and Accessories Installers.

C. For roof edge flashings that are ANSI/SPRI/FM 4435/ES-1 tested and FM Approvals approved, shop is to be listed as able to fabricate required details as tested and approved.

1.7 MOCKUPS

A. Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockup of typical roof edge, including attached gutter approximately 10 ft. (3.0 m) long, including supporting construction cleats, seams, attachments, underlayment, and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless CO/COR specifically approves such deviations by Change Order.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.9 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, are to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim are not to rattle, leak, or loosen, and are to remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. SPRI Wind Design Standard: Manufacture and install roof edge flashings and copings tested in accordance with ANSI/SPRI/FM 4435/ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated in structural documents.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 20 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METAL MATERIALS

A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Aluminum Sheet: Coil-coated sheet, ASTM B209/B209M, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
1. Thickness: 0.032 inch (0.81 mm)
2. Surface: Smooth, flat

2.3 UNDERLAYMENT

A. Self-Adhering, High-Temperature Sheet Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils (0.76 mm) thick, specifically designed to withstand

high metal temperatures beneath metal roofing. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D1970/D1970M.
2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (minus 29 deg C) or lower; ASTM D1970/D1970M.
3. Acceptable Products:
   a. Blueskin PE 200 HT, Henry.
   b. Ultra, W.R. Grace Company.
   c. CCW MiraDRI WIP 3

2.4 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners**,** protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
   a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
   b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

D. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

F. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

G. Asphalt Roofing Cement: ASTM D4586/D4586M, asbestos free, of consistency required for application.

2.5 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 ft. (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Seams:

1. Provide following seams types unless noted or detailed otherwise:
   a. Flat: Drive Cleat
   b. Corner: Double lock corner
   c. Standing: Double lock standing

G. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch- long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness.
4. Fabricate expansion joints, expansion-joint covers and gutter accessories from same metal as gutters.
5. Gutters with Girth up to 15 Inches: Fabricate from the following materials:
   a. Aluminum: 0.032 inch (0.81 mm) thick.

B. Downspouts: Fabricate round downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors.

1. Hanger Style: Hidden
2. Fabricate from the following materials:
   a. Aluminum: 0.024 inch (0.61 mm) thick.

C. Splash Pans: Fabricate to dimensions and shape required and from the following materials:

1. Aluminum: 0.040 inch (1.02 mm) thick.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12 ft. (3.6 m) long sections. Furnish with 6-inch- (150-mm-) wide, joint cover plates. Shop fabricate interior and exterior corners.

1. Joint Style: Overlapped, 4 inches (100 mm) wide.
2. Fabricate As Indicated on the Drawings to dimensions required with 4-inch- (100-mm-) wide flanges and base extending 4 inches (100 mm) beyond cant or tapered strip into field of roof. Fasten gravel guard angles to base of scupper.
3. Fabricate from the following materials:
   a. Aluminum: 0.050 inch (1.27mm)

B. Copings: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12 ft.- (3.6 m) long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, fasten and seal weathertight.
   1. Coping Profile: See Details in accordance with SMACNA's "Architectural Sheet Metal Manual."

C. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Aluminum: 0.040 inch (1.02mm)

2. Copper: 20 oz/sq. ft (0.68mm thick)

D. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
   1. Aluminum: 0.032 inch (0.81 mm) inch (1.02mm)
   2. Copper: 16 oz/sq. ft (0.55mm thick)

E. Flashing Receivers: Fabricate from the following materials:
   1. Aluminum: 0.032 inch (0.81 mm) inch (1.02mm)

PART 3 - EXECUTION

3.1 EXAMINATION

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

   1. Verify compliance with requirements for installation tolerances of substrates.
   2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
   3. Verify that air- or water-resistant barriers have been installed over substrate to prevent air infiltration or water penetration.

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

3.2 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering, High-Temperature Sheet Underlayment:

   1. Install self-adhering, high-temperature sheet underlayment; wrinkle free.
   2. Prime substrate if recommended by underlayment manufacturer.
   3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
   4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses.
   5. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller.
   6. Roll laps and edges with roller.
   7. Cover underlayment within 14 days.

3.3 INSTALLATION OF SHEET METAL FLASHING AND TRIM, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

   1. Install fasteners**,** protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
   2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.

3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches (300 mm) o.c.
6. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
7. Do not field cut sheet metal flashing and trim by torch.
8. Do not use graphite pencils to mark metal surfaces.

B. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 ft. (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.

C. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

D. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

E. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.
   a. Form joints to completely conceal sealant.
   b. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way.
   c. Adjust setting proportionately for installation at higher ambient temperatures.
      1) Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."

F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.

1. Pretin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pretinning where pretinned surface would show in completed Work.
2. Do not solder metallic-coated steel and aluminum sheet.
3. Do not pretin zinc-tin alloy-coated copper.
4. Do not use torches for soldering.
5. Heat surfaces to receive solder, and flow solder into joint.
   a. Fill joint completely.
   b. Completely remove flux and spatter from exposed surfaces.

G. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.4 INSTALLATION OF ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters:
   1. Join sections with joints sealed with sealant.
   2. Provide for thermal expansion.
   3. Attach gutters at eave or fascia to firmly anchor them in position.
   4. Provide end closures and seal watertight with sealant.
   5. Slope to downspouts.
   6. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 ft. (15.2 m) apart. Install expansion-joint caps.
   7. Install continuous gutter screens on gutters with noncorrosive fasteners, removable for cleaning gutters.

C. Downspouts:

   1. Join sections with 1-1/2-inch (38-mm) telescoping joints.
   2. Provide hangers with fasteners designed to hold downspouts securely to walls.
   3. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c.
   4. Connect to PVC pipe and daylight 10 feet away from structure.

D. Splash Pans:

   1. Not required due to daylighting using PVC pipe.

3.5 INSTALLATION OF SLOPED ROOF SHEET METAL FABRICATIONS

A. Install sheet metal flashing and trim to comply with performance requirements sheet metal manufacturer's written installation instructions, and cited sheet metal standard.
   1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
   2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing
   1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.

C. Copings:
   1. Install copings in accordance with ANSI/SPRI/FM 4435/ES-1.

D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.
   1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
   2. Extend counterflashing 4 inches (100 mm) over base flashing.
   3. Lap counterflashing joints minimum of 4 inches (100 mm).

E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with sealant and clamp flashing to pipes that penetrate roof.

3.6 INSTALLATION TOLERANCES

A. Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 ft. (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.7 CLEANING

A. Clean and neutral flux materials. Clean off excess solder.

B. Clean off excess sealants.

3.8 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.

C. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 07 62 00

SECTION 07 62 13

GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes the following aluminum sheet metal gutters and downspouts:

1. Formed roof drainage system including downspouts, gutters, and accessories as shown on drawings.

B. Related Requirements:

1. Section 07 31 29 – Wood Shingles

2. Section 07 62 00 – Sheet Meal Flashing and Trim

1.2 REFERENCES

A. SMACNA (Sheet Metal and Air Conditioning Contractors National Association) – Architectural Sheet Metal Manual.:

1.3 DESIGN REQUIREMENTS

A. Conform to applicable code for size and method of rainwater discharge.

1.4 SUBMITTALS

A. Qualifications: Submit documentation which verifies qualifications of subcontractor, their site supervisors and craftsmen per Part 1.5 of this section.

B. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, Downspout elevations, transition details, gutter to downspout connections, downspout to storm connection, transition around exterior trim and installation details. Minimum Scale for Roof Plan: 1/8” = 1’0. Minimum Scale for Details: 1-1/2” =1’0.

C. Product Data: Submit data on manufactured components, materials, and finishes.

D. Samples:

1. Submit two samples (one gutter and one downspout), 12 inches long illustrating component design, color, and configuration.

E. Color Samples: Submit manufacturer's color samples of materials, consisting of complete color chart representing manufacturer's full range of available colors.

1. Submit metal chips of specific colors as requested by the Architect.

1.5 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: Manufacturer regularly engaged in the manufacturing of materials of similar type to that specified for a minimum of 10 years.

B. Installer Qualifications:

1. Installer regularly engage in installation of materials of similar type to that specified for minimum of 5 years.

2. Use persons trained for installation of materials of similar type to that specified following manufacturer's installation instructions.

C. Perform Work in accordance with SMACNA Manual.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope to drain.

B. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

1.7 FIELD CONDITIONS

A. Consider temperature during installation of required expansion joints.

1.8 WARRANTY

A. Manufacturer’s Warranty: Manufacturer agrees to repair or replace gutters, downspouts and accessories that fail within specified warranty period.

1. Manufacturer Warranty Period: 10 years from date of Substantial Completion.

B. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Fluoropolymer finish: Deterioration includes, but is not limited to, the following:

a. Color facing more than 5 Hunter units when tested according to ASTM D 2244.

b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.

c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

d. Finish Warranty period: 30 years.

C. General Contractor Installation/Workmanship Warranty: Contractor agrees to repair or replace components of gutter and downspout systems that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacturer, fabrication, installation, or other defects in construction.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

2.2 GUTTERS AND DOWNSPOUTS

A. Product Description:

1. Gutters: Factory-coated, two-coat, polyvinylidene fluoride baked on Aluminum sheet metal; half-round style profile, smooth, 0.032” aluminum.
   a. Formed in 10’-0 lengths.

2. Downspouts: Factory-coated, two-coat polyvinylidene fluoride baked on, coated aluminum; Round profile, 0.032” aluminum, smooth.

3. Color: Manufacturer’s Optional factory baked on enamel color to match existing trim pain per Specification 09 90 00 Exterior Paints and Coatings.

4. Coil-Coated Aluminum Sheet Finishes:
   a. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers’ written instructions.
   b. Two-Coat Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and appl coating to exposed metal surfaces to comply with coating and resin manufacturer’s written instructions.

c. Concealed Surface Finish: Apply pretreatment and manufacturer's standard acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

d. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

2.3 ACCESSORIES

A. Anchors and Supports: Profiled to suit gutters and downspouts.

B. Anchoring Devices: In accordance with SMACNA requirements and type recommended by fabricator.

C. Gutter Supports: Fascia Mounted Gutter Hanger Manufacturer's standard aluminum fascia mounted hanger. Provide stiffening strap per Manufacturer's recommendation.

1. Fasteners: Same material and finish as gutters and downspouts fasteners of sufficient length to penetrate minimum 2 inch into rafter tails.

D. Downspout Supports: Brackets match existing plain profile. Same material and finish as gutter and downspouts.

E. Expansion Joints: SMACNA designs

1. Cover Plate Width: 12 inches.

2. Material: Match gutters.

3. Finish: Match gutters.

4. Color: Match gutters.

F. Gutter Miters: Provide mitered corners, lapped, sealed and riveted Corners shall extend a minimum of 12 inches from the corner in each direction Lap joint and sealant where connecting to continuous gutter. Match material, shape and finish of gutter.

G. Gutter End Caps: Match material, shape, and finish of gutter.

H. Outlet Tubes: Match material and shape of downspout.

I. Tape: 6-inch wide EPDM/butyl pressure-sensitive tape.

J. Provide flashing complying with Section 07 62 00 Sheet Metal Flashing and Trim at roof apron, fascia apron, and where indicated.

K. Downspout Strainer: Aluminum wire-ball downspout strainer.

2.4 FABRICATION

A. Form gutters and downspouts of profiles and sizes indicated.

B. Fabricate with required connection pieces including elbows, transitions, and the like.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Provide Factory applied finish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify surfaces are ready to receive gutters and downspouts.

B. Repair minor damages to finish according to Manufacturer's instructions as approved by Architect.

C. Do not install damaged components.

3.2 PREPARATION

A. Paint surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil as recommended by SMACNA.

3.3 INSTALLATION

A. General: Install Work securely in place and provide for expansion and contraction of components using lapped and sealed joints to be weathertight. Coordinate all work with Section 07 71 00 Roof Specialties.

B. Space expansion joints in gutters at a maximum of 50 foot on center per SMACNA.

C. Rivet joints where required for strength, exposed rivet shall match gutter or downspout color.

D. Torch cutting of components is not allowed.

E. Install roof edge flashings at roof edge conditions as indicated on Drawings.

F. Gutters:

1. Install gutter supports at rafter tails, no more than 24-inches on center.

2. Slope gutters evenly to downspouts; proved end caps at gutter ends and seal watertight per manufacturer's instructions.

3. Slope gutters 1/8 inch per ten foot minimum.

4. Install outlet tubes at all downspout locations, seal watertight.

5. Apply joint sealants at gutter joints per manufacturer's installation instructions and to meet the requirements of Section 07 92 00 – Joint Sealants.

G. Downspouts:

1. Install downspouts, provide elbows and offsets, and secure downspouts to wall construction using downspout supports spaced no more than 10 feet on center. Maximum distance of downspout support from top to bottom of downspout shall be 2 feet. Provide 45 degree elbow at bottom of downspout to direct water away from wall surface or foundation.

2. Where downspout connects to building perimeter drainage system, lap downspout and perimeter drainage pipe a minimum of 3 inches.

H. Expansion joints to be installed at high point of gutter.

I. Provide concrete splash block at each downspout.

3.4 TESTING

A. Test gutters and downspouts for proper operation with CO/COR present.

B. Block downspouts and fill gutters to verify that there are no leaks.

C. Release downspout blockage to verify proper flow to and through downspouts.

D. Remedy deficient conditions and retest until all components of system operate properly.

3.5 CLEANING

A. Clean Materials promptly after installation in accordance with Manufacturer's instructions.

B. Do not use harsh cleaning materials or methods that could damage finish.

END OF SECTION 07 62 13

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General Contractor shall provide all labor, material, equipment and service necessary or incidental to the completion of all work of this section as shown on the drawings, herein specified, or otherwise required.
   a. Non staining silicone joint sealants.

B. Related Requirements:

1. Section 03 30 00 – Cast in Place Concrete

2. Section 07 62 00 – Sheet Metal Flashing and Trim

3. Section 08 01 52 – Wood Window Restoration

4. Section 08 01 52 – Wood Doors

1.2 REFERENCED STANDARDS

A. Standards: U.S. Federal Specification TT S00227E, Type II, Class A and ASTM C920 79.

B. Manufacturer's catalogs: The acceptable manufacturer's catalogs, current at date of bidding documents, are incorporated by reference to the same force and effect as if repeated herein at length.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Convene meeting prior to ordering materials to review scope of work and verify construction details, with the following attendees;
   1. General Contractor
   2. Installing Contractor
   3. Contacting Officer’s Representative
   4. Manufacturer’s Representative

B. The meeting shall discuss, approved shop drawings, in-field work, precautions, installation procedures Quality Control Plan and all job conditions and processes including coordination of high-performance coating and structural work. All subcontracting firms involved with this work shall participate in the meeting.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Joint sealants.
2. Joint sealant backing materials.

B. Samples for Initial Selection: Manufacturer's standard color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. 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.

E. Qualification Data: For qualified testing agency.

F. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.

1.5 INFORMATIONAL SUBMITTALS

A. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:

1. Joint-sealant location and designation.
2. Manufacturer and product name.
3. Type of substrate material.
4. Proposed test.
5. Number of samples required.

B. Preconstruction Laboratory Test Reports: For each joint sealant and substrate material to be tested from sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

C. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

D. Field Quality-Control Reports: For field-adhesion-test reports, for each sealant application tested.

E. Sample warranties.

1.6 CLOSEOUT SUBMITTALS

A. Manufacturers' special warranties.

B. Installer's special warranties.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Authorized representative who is trained and approved by manufacturer.

B. Testing Agency Qualifications: Qualified in accordance with ASTM C1021 to conduct the testing indicated.

1.8 MOCKUPS

A. Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.9 PRECONSTRUCTION TESTING

A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Adhesion Testing: Use ASTM C794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Compatibility Testing: Use ASTM C1087 to determine sealant compatibility when in contact with glazing and gasket materials.
3. Stain Testing: Use ASTM C1248 to determine stain potential of sealant when in contact with substrates.
4. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint-sealant backings, and miscellaneous materials.
5. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
6. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.
7. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by CO.
2. Conduct field tests for each kind of sealant and joint substrate.

3. Notify CO seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
5. Test Method: Test joint sealants in accordance with Method A, Tail Procedure, in ASTM C1521.
    a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
6. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
7. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.10 FIELD 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.
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.

1.11 WARRANTY

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

1. Warranty Period: Five 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 stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from 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 SOURCE LIMITATIONS

A. Obtain joint sealants from single manufacturer.

2.2 JOINT SEALANTS, 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. Colors of Exposed Joint Sealants: As selected by CO from manufacturer's full range.

2.3 NONSTAINING SILICONE JOINT SEALANTS

A. Non staining Joint Sealants: No staining of substrates when tested in accordance with ASTM C1248.

B. Silicone, Non staining, S, NS, 100/50, NT: Non staining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Use NT.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Pecora Corporation.
      b. Sika Corporation; Joint Sealants.
      c. Tremco Incorporated.

C. Silicone, Non staining, S, NS, 50, NT: Non staining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Adfast.
      b. GE Construction Sealants; Momentive Performance Materials Inc.
      c. Pecora Corporation.
      d. Sika Corporation; Joint Sealants.
      e. The Dow Chemical Company

2.4 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Non staining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin) or any of the preceding types, 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. Provide self-adhesive tape where applicable.

2.5 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.

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. 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 performance of the Work.

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

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. Nonporous joint substrates include the following:
   a. Metal.

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 C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of type 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 bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. 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.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants in accordance with 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 in accordance with Figure 8A in ASTM C1193 unless otherwise indicated.
4. Provide flush joint profile in accordance with Figure 8B in ASTM C1193.
5. Provide recessed joint configuration of recess depth and in accordance with Figure 8C in ASTM C1193.
    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

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

B. Tests and Inspections:

1. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
    a. Extent of Testing: Test completed and cured sealant joints as follows:
        1) Perform 2 tests for the first 50 feet of joint length for each kind of sealant and joint substrate.
    b. Test Method: Test joint sealants in accordance with Method A, Tail Procedure, in ASTM C1521.
        1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
    c. Inspect tested joints and report on the following:
        1) Whether sealants filled joint cavities and are free of voids.
        2) Whether sealant dimensions and configurations comply with specified requirements.
        3) Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
    d. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
    e. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
2. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

C. Prepare test and inspection reports.

3.5 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.

3.6 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, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07 92 00

SECTION 08 01 52

WOOD WINDOW RESTORATION

PART 1 - GENERAL

1.1 WORK INCLUDES

A. General Contractor shall provide all labor, materials, equipment, and services necessary or incidental to the completion of all work of this section as shown, herein specified, or otherwise required.

B. Base Bid Work Includes:
1. Protect windows in -place by installing window protection panels and metal sill.
2. Provide replacement glass in windows with broken panes
3. Restore and repair Cupola wood frame openings and install new ventilation louver system.

C. Option Bid Work Includes: Option 1 – Wood Window Repairs.
a. Repair and restore existing damaged wood window sash, sills and frames.
b. Replace missing wood window members with members matching dimensions and profiles of existing wood window members.
c. Provide replacement window hardware for existing wood windows.
d. Provide new weatherstripping at existing wood windows.
e. Clean, refinish, and repaint exterior side of wood windows.
f. Clean and refinish interior side of wood windows.
g. Provide replacement glass in windows.
h. Wood window members include head, jamb, and sill, exterior trim, sash members, and interior casing, stool, and apron.

1.2 RELATED WORK

A. Section 07 92 00 Joint Sealants

B. Section 08 51 60 Window Protection

C. Section 09 91 13 Painting

1.3 REFERENCED STANDARDS

A. National Park Service (NPS):

1. Technical Preservation Brief 9: The Repair of Historic Wood Windows.
2. Technical Preservation Brief 10: Exterior Paint Problems on Historic Woodwork
3. Epoxies for Wood Repair in Historic Buildings

B. AWI Quality Standards: Premium

1.4. SUBMITTALS

A. Product data for each product indicated including recommendations for their application and use. Include certifications substantiating that products comply with requirements.

1. Information on glazing.
2. Details and fabrication methods.
3. Profiles and dimensions of individual components, including member thickness.
4. Product data for cleaning materials and hardware required.

B. Samples:

1. Submit samples of replacement members, 12" long each, including parting beads and weatherstripping.
2. Submit samples of hardware and accessories

C. Shop Drawings/Samples: For each type of window required. Include the following information not fully detailed elsewhere:

1. Location of weatherstripping, sealants, glazing stops.
2. Replacement hardware, including operators.
3. Glazing details.

D. Color Samples:

1. Submit color samples of painted finish.

E. Historic Treatment Program: Submit before work begins, no later than five days before the preconstruction meeting.

1. Narrative with detailed descriptions of the materials, methods, and equipment to be used for the restoration work including protection of surrounding materials, temporary protections of openings and site during restoration operations.

F. Qualifications Data: Successful bidder shall submit resumes for foreman and all workers involved with the project. The contractor performing the work shall have at least ten (10) years' experience and five (5) relevant projects within that period complete at the time of bidding. Projects shall be of same size or larger with similar scope and historic experience. The CO reserves the right to approve or disapprove the use of the personnel contingent upon their experience.

1. The Contractor performing the work shall have at least ten (10) years' experience with similar work on historic buildings. Successful Contractor performing the work shall submit a list of at least five similar, complete projects to the CO including a name of a person who may be contacted for information concerning referenced projects. Craftsman will be expected to be well-versed with historic methodologies, conditions, and solutions.
   a. Submit color photographs (can be electronic) of each type of window work required for this project.
2. Superintendent and foreman for work in this section assigned to this project shall each have a minimum of ten (10) years' experience with this type of repair work. References of projects they have completed shall be submitted to the CO by the successful bidder. The project superintendent and foreman assigned to this project shall not be changed throughout the duration of the work without written request to and consent of the CO.

3. Installer qualifications: Employ only craftspeople experienced in restoration, repairing, and replicating historic wood windows and their elements with a minimum of five (5) years project experience. Provide written and photographic documentation of restoration and conservation skills.

G. Mock-up: Perform restoration of one window unit of each substantial type, following requirements of this section to demonstrate materials and methods intended to be used in the finished work. Mockup shall demonstrate repairs including dutchman, epoxy consolidation/patching and refinishing with new finishes applied after CO approval of repairs. Include hardware – new and restored where applicable.

1. Each craftsperson scheduled to do work at the building will provide a mock-up of their intended scope of work. Utilize the same craftsperson, materials and installation methods in the mock-up as intended for the final Work. Schedule the installation so that the mock-up may be examined, and any necessary adjustments made, prior to commencing fabrication of the Work. Replace unsatisfactory or rejected items as directed by CO if it does not meet minimum standards of expected craftmanship for this project.
2. Obtain CO approval of mock-up before proceeding with restoration of remaining window and window components. Protect approved mock-up until completion of all work. Approved mock-up shall represent the minimum acceptable standard for wood window restoration work.

1.5 PROJECT CONDITIONS

A. Safety: The existing paint on the woodwork was tested and has not been found to contain lead in the paint. Windows were not tested and it is assumed contain hazardous containing materials. See the Lead based Paint and Hazardous Materials Specifications, and reports contained in the Project Manual.

B. Take all necessary precautions to ensure health and safety of all persons engaged in removing and disposing of paint or other substances containing lead or asbestos and handle and dispose of all residues generated from removal to avoid contamination of buildings, soils, bodies of water, water table, atmosphere, and other environmental elements and in compliance with all applicable laws and regulations

1.6 QUALITY ASSURANCE

A. Specialty Subcontractor (contractor performing the work) Qualifications: Firm with at least ten (10) years of relevant experience successfully restoring wood windows with at least (5) projects similar in scope and historic nature to that indicated for this Project, and with sufficient production capacity to produce required units without causing delay in the Work.

B. AWI Quality Standard: Comply with applicable requirements of “Architectural Woodwork Quality Standards” published by the Architectural Woodwork Institute (AWI).

1.7 PREINSTALLATION CONFERENCE

A. General Contractor shall arrange conference at project site. General contractor, contractor performing the work’s project manager and site foreman, and CO shall be in attendance. If the

work impacts other trades, a representative from those contractors shall also be in attendance. This shall take place before work of this section begins.

1. Review methods and procedures related to window restoration
2. Temporary protections for openings
3. Construction Schedule
4. Verify availability of materials, Specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
5. Materials, material application, sequencing, tolerances, and required clearances.

1.8 PROJECT CONDITIONS

A. Field Measurements: Check actual window units on site and measure replacement members by accurate field measurements before fabrication of replacement members.

B. Do NOT install sealants when ambient temperature is less than 40 degrees F.

1. Maintain this minimum temperature during and after installation of sealants.

C. Epoxy applications shall be performed in favorable weather per Manufacturer’s Direction, no less than 50 degrees Fahrenheit.

1. Area of consolidation must not be subjected to freezing temperatures within 24 hours of application. Use of a heat tent around area is acceptable. Shade mixing and application area from direct sunlight. Provide shade to application area for a minimum of 8 hours following consolidation of affected area.

D. Protection of Window Opening: After removal of window sash, General Contractor shall provide plastic sheet over 5/8-inch plywood or OSB, fitted for each individual opening that is secured by a non-destructive anchoring system. The panel shall be weathertight and not allow any water into the building.

1.9 WARRANTY

A. Workmanship Warranty: Warrant repair procedures, for a period of two years against: discoloration or mismatch, loss of bond of repairs, inoperability, weathertightness, broken hardware, deterioration of finishes and other materials beyond normal weathering.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Wood General: Wood shall be of sound stock, solid wood without fingerjoints and thoroughly seasoned. Wood shall be free of defects or blemishes on surfaces exposed to view. Materials that do not comply with specifications for quality and grade, are in any way defective, or are otherwise not in proper condition, will be rejected.

1. New Wood for window and window elements shall match profile, grade of existing species, quality, cut and grain pattern in-kind.

B. Replacement Sash Parts: Species and cut to match existing.

1. Use wood that has been kiln dried to a moisture content of 6 to 12 percent at time of fabrication.

C. Replacement Exterior Trim and Frame, including head, jamb, and sill: Species and cut to match existing.

D. Parting Bead: Species and cut to match existing.

E. Water Repellent Treatment: New lumber and existing wood members shall be water-repellent preservative treated after machining in accordance with NWWDA I.S. 4.

F. Fasteners: Provide bronze or brass fasteners warranted by the manufacturer to be non-corrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: If exposed fasteners are used, provide Phillips, flat-head machine screws that match the finish of the member or hardware being fastened, as appropriate.

G. Anchors, Clips, and Accessories: Fabricate anchors, clips, and window accessories ofaluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel complying with requirements of ASTM B 633 for SC 3 (severe) service condition; provide sufficient strength to withstand design pressure indicated.

1. Design pressure at Project site is 35 pounds per square foot.

H. Glazing Materials:

1. Glazing Putty:
   a. Set glazing fully bedded with silicone glazing and wood stop. Sealant per Glazing Manufacturer.

I. Louvers
1. Metal Louvers: Size, type, and profile showing and fabrications for the following:
2. Natural aluminum, extruded aluminum complying with AA-C22A32 Class II finish.
3. Manufacturer: Airolite, or equal.
4. Model No. SCH401, 4” depth.
5. Color: To match siding and frames

2.2 WINDOW HARDWARE & ACCESSORIES:

A. Base Bid:

1. Rehabilitation of salvaged door hardware

2. Installation of new lever handles and springs onto existing door hardware to meet ABAAS Standards.

B. Option Bid: Cleaning and rehabilitation of window hardware.

C. HARDWARE MATERIALS

D. Replacement Hardware: Replace existing damaged or missing window hardware with hardware salvaged from windows being replaced.

1. Use salvaged hardware only if it matches the original hardware.

E. Where salvaged hardware is not available, use new replacement hardware manufactured to replicate the existing hardware. Provide each restored window with full complement of hardware and fasteners matching the original windows.

F. Finishes: To match original finish.

G. Keys and Keying: Keying of new locks shall be by the National Park Service.

H. Manufacturer: Window hardware shall be manufactured by one of the following:
1. Van Dyke's Restorers, P.O. Box 159, P.O. Box 159, Hodges, SC 29653, 1-800-242-0329

2.3 WOOD EPOXY REPAIR MATERIALS:

A. Manufacturer: Epoxy repair materials shall be able to be tinted and shall be manufactured by one of the following:

1. Abatron, Inc.
5501 95th Ave.
Kenosha, WI 53144
Phone: (800)445-1754 or (262)653-2000
2. ConServ Epoxy LLC
PO Box 454
Northford, CT 06472
Phone: 203- 484-4123

3. Advanced Repair Technology, Inc.
PO Box 510
Cherry Valley, NY 13320
Phone: 607-264-9040
4. West Epoxy Systems
Gougeon Brothers, Inc.
Bay City, Michigan, USA. ISO 9001
Phone: 866-937- 8797

2.4 WEATHERSTRIPPING:

A. Metal Weather Stripping:

2.5 PAINT MATERIALS:

A. Semi-Gloss, Alkyd-Enamel Finish: 2 finish coats over a primer.

1. Primer: Exterior, alkyd wood primer applied at spreading rate recommended bythe manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
a. Glidden: UH 450 Ultra-Hide Oil/Alkyd Exterior Primer.

b. Moore: Moorwhite Primer #100.
c. PPG: 1-70 or 1-870 Sun-Proof Exterior Wood Primer.
d. P & L: S/D 1008 Suprime “8” Exterior Alkyd Wood Primer.
e. S-W: A-100 Exterior Alkyd Wood Primer Y24W20.

2. First and Second Coats: Semi-gloss, exterior, alkyd enamel applied at spreadingrate recommended by the manufacturer to achieve a total dry film thickness of not less than 3.0 mils.
   a. Glidden: 4500 Series Glid-Guard Alkyd Industrial Enamel.
   b. Moore: Impervo Enamel #133.
   c. PPG: 6-282 Speedhide Interior/Exterior Gloss-Oil Enamel.
   d. P & L: S 4500 Series Tech-Gard Maintenance Gloss Enamel.
   e. S-W: Industrial Enamel B-54 Series.

B. Provide painted finish for exterior and interior of wood windows. Paint entire exposed portions of wood windows.

C. Provide primers and finish coats as specified. Apply paint finish materials in accordance with requirements in Section 09 91 13 Exterior Painting.

D. Interior window sash, sills, and frames to be repainted. Paint entire exposed portions of wood windows.

2.6 FABRICATION OF REPLACEMENT MEMBERS:

A. Molded profiles of all replacement members shall match existing profiles.

B. Join sash members with mortise and tenon, coped and assembled under pressure and pinned.

C. Frame members shall be dadoed and rabbeted to match existing frame.

D. Repair damaged members by filling indentations and holes in existing members. Glues and fillers used to fill existing indentations and holes shall be sanded smooth to match surrounding surface.

E. Ease edges of replacement members as necessary to match existing profiles.

2.7 MISCELLANEOUS

A. Oil clay – used to keep consolidant from leaking through cracks.

B. Adhesives for Dutchman Repairs: Epoxy resin glue designed for use with wood.

1. Manufacturers:
   a. Abatron
   b. Advanced Repair Technology, Inc.
   c. ConServ Epoxy LLC
   d. West System

PART 3 - EXECUTION

3.1 GENERAL

A. Repair strategies are designed to maximize the retention of historic fabric while making the windows weather resistant for long-term use and serviceable for cyclical maintenance. The key principle is to minimize water infiltration, the cause of cracking, checking and deterioration of the wooden sash and components.

3.2 GENERAL RESTORATION PROCEDURES

A. Remove sash from frames and cover window openings immediately with plastic sheet over 5/8-inch plywood or OSB, fitted for each individual opening that is secured by a non-destructive anchoring system. Provide weathertight temporary installation during repair period.

B. Identify sash with numbering system to assure reinstallation in same location. Key windows to floor plan showing location.

3.3 PREPARATION

A. Remove all face glazing compound from each window sash using an approved method. Remove bed glazing from each putty-bar and putty-bed using putty knives or appropriate scrapers.

B. To minimize breakage, paint lines at the edges of window stops and parting strips must be cut/scribed first with a sharp knife before the moldings are removed.

1. Moldings must be pried loose patiently and carefully.
2. Recycle per designated requirements in 01 74 19 – Construction Waste Management and Disposal.

C. All nails will be removed by pulling them through the back of the moldings only.

D. Clean existing wood windows of mildew and dirt. To kill mildew use bristle brush and solution of 1/3 cup household detergent, 1 quart 5% sodium hypochlorite (liquid household bleach), and 3 quarts warm water. After cleaning mildewed surfaces, rinse thoroughly with fresh water. Allow to dry before painting. No ammonia is permitted.

E. Condition new wood replacement members to prevailing conditions in installation areas before installing.

3.4 WOOD SASH AND FRAME CARPENTRY REPAIRS

A. Surface Preparation: Dry affected wood member completely to arrest further decay. Dry in place if possible or remove the member and keep in a cool dry place until dry. The epoxy can trap moisture in the wood fibers and accelerate the deterioration process.

B. Note that both sides of window sash, frames, sills, aprons, will be painted.

1. Use dutchman if larger than a check, Use wood putty to match interior finish or stain for repairing checks, gouges, or cracks on interior surfaces.

C. Remove deteriorated wood fibers. All deterioration will be removed at minimum ¼” past the apparent area of deterioration.

D. A small area, 4 cubic inches, can be primed and filled with epoxy.

1. Areas larger than 4 cubic inches, will be repaired by Dutchmen.
2. Fabricate dutchman to match existing grain orientation as closely as possible. Square void to a simple shape that provides a mechanical bond if possible. Clean glue surfaces with acetone or denatured alcohol. Fabricate slightly oversized Dutchman and glue into void. Ensure that joints are tight. Plane and sand Dutchman to match contiguous surfaces. Fashion Dutchman to accommodate historic joinery.
3. Where deterioration or loss at end of component requires dutchman repair, use a diagonal scarf joint for end-to-end joint between dutchman and remaining portion of component.

E. Repair cracks and checked wood and slightly deteriorated wood with liquid epoxy. Use epoxy repair materials in accordance with manufacturer's requirements. If interior facing repair – repair with dutchman.

F. Repair deteriorated wood with semi-liquid epoxy. Use epoxy repair materials in accordance with manufacturer's requirements.

G. Splice repair deteriorated wood section of the sash where deterioration is structural such as at meeting points of the rails.

H. Repair of Tenon: Disassemble sash as necessary. Cut off broken or deteriorated tenon. Mortise component approximately 3" deep to receive new tenon. Fabricate new slip tenon and glue into place. Shave exposed tenon end to fit existing mortise.

3.5 INSTALLATION OF REPLACEMENT MEMBERS

A. Replicate the different component profiles in-kind. Remove coatings from existing profiles to ensure adequate match. Sample stock run from the custom cutter knives shall be submitted to the CO for approval.

B. Before installing new replacement woodwork, examine shop-fabricated work for completion and complete work as required, including back priming.

C. Run new component that matches historic profile.

D. Fashion replacement component to replicate historic joinery.

E. Back-prime any joints that become exposed during disassembly.

F. Treat existing wood window members with water repellent preservative by brush application applied liberally to all lap and butt joints, edges and ends of boards and bottoms of window frames.

3.6 GLAZING WINDOW SASH

A. Re-glaze any broken or damaged lites and seal according to glazing manufacturer's requirements. Allow for excess sealant to squeeze out. Trim to provide weathertight seal.

3.7 REFINISHING

A. Preparations for Finishing: Perform sanding and filling of countersunk fasteners, seal concealed surfaces. Clean and prepare surfaces to be painted. Provide barrier coats over

incompatible primers or remove and reprime. Notify CO in writing about anticipated problems using the specified finish-coat material with substrates primed by others.

B. Mask glass prior to painting to prevent paint from adhering to surface of glass.

C. Remove sufficient paint from interior and exterior surfaces of the wood windows down to stable surface to create a surface capable of bonding with the new paint. Full paint removal is not required unless removal is part of hazard material abatement (not specified in this section). No power-assisted tools to be used in the removal of loose paint. After substrate is sanded, vacuum and wipe all surfaces to ensure dust-free substrate.

D. Provide Finish as specified.

3.8 EXAMINATION

A. Examine opening before installation. Verify that window opening and sash are square. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Wood surfaces shall be dry and free of construction debris.

C. Wood frame shall be dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (75mm) of corner.

D. Coordinate window installation with wall flashings and other built-in components

3.9 REINSTALL WINDOW SASH

A. General: At completion of installation, windows shall be completed with all components and with unblemished paint, stain and finish coats. All operating sash shall operate smoothly over entire height of weatherstripping.

B. Remove temporary panels and vertical supports

C. Install new weatherstripping

D. Install woodwork with fasteners concealed. Fill nail holes and touch up the finish to match surrounding woodwork.

E. Reinstall window sash in restored frames for smooth operation

F. Adjust existing and new operating sash and hardware to provide a tight fit at contact points and weatherstripping, and to provide smooth operation and a weathertight closure. Lubricate existing hardware and moving parts as necessary.

3.10 CLEANING

A. Clean interior and exterior surfaces promptly after installation. Remove excess glazing putty and sealants, dirt, and other substances.

B. Confirm head, jamb, and sill, exterior trim, blindstop, sash members, and interior casing, stool,

apron and window components at each window have been repaired and refinished and are ready to be cleaned.

C. Clean exterior and interior sides of all glass within the project limits. Use razor scrapers to remove existing paint build-up and other soil. Wash glass clean of all residue. Mask glass prior to painting to prevent paint from adhering to surface of glass. Comply with manufacturer's recommendations for final cleaning and maintenance. Remove nonpermanent labels from glass surfaces.

D. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts. Clean glass promptly after restoration of windows.

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

2.8 SCHEDULE

A. See Drawings for Window Schedule. All windows shall be field verified.

END OF SECTION 08 01 52

SECTION 08 01 53

WOOD DOORS

PART 1 - GENERAL

1.1 WORK INCLUDES

A. Base Bid: Work includes, as indicated on Drawings:
   1. New Stile and rail wood doors
   2. Restoration and repair of salvaged and in-place wood doors and frames

   3. General Contractor shall provide all labor, materials, equipment, and services necessary or incidental to the completion of all work of this section as shown, herein specified, or otherwise required

      a. Wood door members include stiles, rails, panels, as well as frame head, jamb, and all associated trim.

1.2 RELATED WORK

A. Section 02 41 19 – Selective Disassembly, Salvage and Protection

B. Section 08 5 1 60 – Window Protection

C. Section 08 71 00 – Door Hardware

D. Section 09 91 13 – Painting

1.3 SUBMITTALS

A. Product data for each product indicated including recommendations for their application and use. Include certifications substantiating those products comply with requirements.
   1. Details and fabrication methods.
   2. Profiles and dimensions of individual components, including member thickness.
   3. Product data for cleaning materials and hardware required.
   4. Weatherstripping
   5. Detailed descriptions of the materials, methods, and equipment to be used for the restoration work.

B. Shop Drawings: Submit shop drawings indicating elevations of units, sections, fastenings, sizes, and profiles of new components to be fabricated, jointing methods, methods of installation and anchorage, method of glazing, locations of operating hardware, method, and material for weatherstripping, details, and connections with other work showing location of each unit.

C. Samples:

   1. Submit samples of replacement members, 12” long each.

D. Color Samples:

1. Submit finish samples

E. Historic Treatment Program: Submit before work begins, no later than five days before the preconstruction meeting.

1. Narrative with detailed descriptions of the materials, methods, and equipment to be used for the restoration work including protection of surrounding materials, temporary protections of openings and site during restoration operations.

F. Qualifications Data: Successful bidder shall submit resumes for foreman and all workers involved with the project. The contractor performing the work shall have at least ten (10) years' experience and five (5) relevant projects within that period complete at the time of bidding. Projects shall be of same size or larger with similar scope and historic experience. The CO reserves the right to approve or disapprove the use of the personnel contingent upon their experience.

1. The Contractor performing the work shall have at least ten (10) years' experience with similar work on historic buildings. Successful Contractor performing the work shall submit a list of at least five similar, complete projects to the CO who may be contacted for information concerning referenced projects. Craftsman will be expected to be well-versed with historic methodologies, conditions, and solutions.
   a. Submit color photographs (can be electronic) of each type of door work required for this project.

2. Superintendent and foreman for work in this section assigned to this project shall each have a minimum of ten (10) years' experience with this type of repair work. References of projects they have completed shall be submitted to the Architect by the successful bidder. The project superintendent and foreman assigned to this project shall not be changed throughout the duration of the work without written request to and consent of the CO.

3. Installer qualifications: Employ only craftspeople experienced in restoration, repairing, and replicating historic wood windows and their elements with a minimum of five (5) years project experience. Provide written and photographic documentation of restoration and conservation skills.

G. Mock-up: Perform restoration of one door of each substantial type, following requirements of this section to demonstrate materials and methods intended to be used in the finished work. Mockup shall demonstrate repairs including dutchman, epoxy consolidation/patching and refinishing with new finishes applied after CO approval of repairs. Include hardware – new and restored where applicable.

1. Each craftsperson scheduled to do work at the building will provide a mock-up of their intended scope of work. Utilize the same craftsperson, materials and installation methods in the mock-up as intended for the final Work. Schedule the installation so that the mock-up may be examined, and any necessary adjustments made, prior to commencing fabrication of the Work. Replace unsatisfactory or rejected items as directed by CO. Based on the quality of mock-up, Architect reserves the right to remove craftspersons that do not meet minimum standards of expected craftmanship for this project.

2. Obtain CO approval of mock-up before proceeding with restoration of remaining door and doors components. Protect approved mock-up until completion of all work. Approved mock-up shall represent the minimum acceptable standard for wood door restoration work.

1.4 QUALITY ASSURANCE

A. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI).

1.5 PREINSTALLATION CONFERENCE

A. General Contractor shall arrange conference at project site. General contractor, contractor performing the work's project manager and site foreman, and CO shall be in attendance. If the work impacts other trades, a representative from those contractors shall also be in attendance. This shall take place before work of this section begins.

1. Review methods and procedures related to door restoration
2. Temporary protections for door openings
3. Construction Schedule
4. Verify availability of materials, Specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
5. Materials, material application, sequencing, tolerances, and required clearances.

1.6 WARRANTY

A. Workmanship Warranty: Warrant repair procedures, for a period of two years against: discoloration or mismatch, loss of bond of repairs.

1.7 PROJECT CONDITIONS

A. Field Measurements: Check actual doors and frames on site and measure replacement members by accurate field measurements before fabrication of replacement members.

B. Protection of Door Openings: After removal of door, General Contractor shall provide exterior doors to maintain egress and access, fitted for each individual opening that is secured with by a non-destructive anchoring system. The panel shall be weathertight and not allow any water into the building at the exterior. Security requirements shall be coordinated with the University.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Wood General: Wood shall be of sound stock, solid wood without fingerjoints and thoroughly seasoned. Wood shall be free of defects or blemishes on surfaces exposed to view. Materials that do not comply with specifications for quality and grade, are in any way defective, or are otherwise not in proper condition, will be rejected.

1. Replacement Door Members and door elements shall match profile, grade of existing species, quality, cut and grain pattern in-kind.

2. New Wood Stile and Rail Doors:
   a. Grade: Premium
   b. Profiles: As indicated on Drawing
   c. Wood Species: White Birch
   d. Solid Core doors: Not less than 1-3/8" for stiles; not less than 5 inches for top and bottom rails.
   e. Stiles and rails shall meet performance criteria as required by NWMA.
   f. Finish: P-1
   g. Manufacturers:
      1) Maiman 2425 Brockton St., #103, San Antonio, Texas, 210-826-6616
      2) Woodtech, Inc., 455 4th Avenue, E. N. Columbia Falls, Montana, 59912, 406-249-8941.
      3) La Force, 1060 West Mason Str., Grenn Bay, WI 54303, 920-497-7100.
      4) Or Equal

B. Exterior Trim and Frame, including head and jamb: Match existing species and cut.

C. Water Repellent Treatment: New lumber and existing wood members for exterior doors shall be water- repellent preservative treated after machining in accordance with NWWDA I.S. 4.

D. Fasteners: Provide fasteners warranted by the manufacturer to be noncorrosive and compatible with door members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: If exposed fasteners are used, provide slotted, flat head machined screws that match the finish of the member or hardware being fastened, as appropriate.

2.2 HARDWARE

A. Replacement Hardware: Replace door hardware with new replacement hardware as scheduled in Section 08 71 00 Door Hardware. Provide each door with full complement of hardware and fasteners.

B. Maintain Existing hardware, clean and reinstall

2.3 FABRICATION OF REPLACEMENT MEMBERS:

A. Molded profiles of all replacement members shall match existing profiles.

B. Join members with mortise and tenon, coped and assembled under pressure and pinned.

C. Frame members shall be cut to fit the existing frames.

2.4 REPAIR MATERIALS

A. Repair damaged members by filling indentations and holes in existing members.

B. WOOD EPOXY REPAIR MATERIALS:

1. Manufacturer: Epoxy repair materials shall be able to be tinted and shall be manufactured by one of the following:
   a. Abatron, Inc.
      5501 95th Ave.
      Kenosha, WI 53144
      Phone: (800)445-1754 or (262)653-2000
   b. ConServ Epoxy LLC
      PO Box 454
      Northford, CT 06472
      Phone: 203- 484-4123
   c. Advanced Repair Technology, Inc.
      PO Box 510
      Cherry Valley, NY 13320
      Phone: 607-264-9040
   d. West Epoxy Systems
      Gougeon Brothers, Inc.
      Bay City, Michigan, USA. ISO 9001
      Phone: 866-937- 8797

PART 3 - EXECUTION

3.1 PREPARATION

A. New Doors:
   a. Install new doors in accordance with manufacturer's installation guidelines and recommendations.
B. Existing Doors:
   a. Clean existing wood doors of dirt and dust.

   b. Condition new wood replacement members to prevailing conditions in installation areas before installing.

   c. Before installing new replacement woodwork, examine shop-fabricated work for completion and complete work as required.
   d. Identify doors with numbering system to assure reinstallation in same location.
   e. Disassembly of Doors:
      1) Label (key to the door schedule, bid set drawings) and maintain all associated elements from each door opening together. See door schedules for hardware organization and reuse.
      2) Do not use permanent markers on surfaces.
      3) Use dividers and store doors vertically on edge, as they sit in the jamb, not lying down.
      4) To minimize breakage, paint lines must be cut/scribed first with a sharp knife before moldings are removed.
      5) Moldings must be pried loose patiently and carefully.
      6) All nails will be removed by pulling them through the back of the moldings only. Representative nails will be tagged and archived for the CO.
   b. Any breakage of wooden elements shall be repaired immediately.
   c. Hardware disassembly:

1) After removing all screws, hardware should be taken from each door.
2) Tag and retain all hardware and screws separately for each opening.

C. Exterior door openings shall be filled with flush doors, fitted to opening, and shall have temporary hinges, handles, surface applied locks and compressible weatherstripping to prevent weather infiltration.

3.3 HARDWARE TREATMENT

A. Refer to Specification Section 08 71 00 – Door Hardware.

3.5 INSTALLATION

A. Frames and Doors:
   a. Install woodwork with concealed fasteners. Fill nail holes and touch up the finish to match surrounding woodwork.
   b. Adjust existing and new door members and hardware to provide a tight fit, and to provide smooth operation and closure. Lubricate existing hardware and moving parts, as necessary.
   c. Weatherstripping – See Section 08 71 00 - Door Hardware

3.6 FINISHING

A. Preparations for Finishing: Perform sanding and filling of countersunk fasteners, seal concealed surfaces. Clean and prepare surfaces to be painted. Notify CO in writing about anticipated problems using the specified finish-coat material.

B. Refinish doors per Section 09 91 13 – Painting

C. Clean existing hardware and reinstall.

D. Install new hardware in accordance with manufacturer's directions to provide a secure and smoothly operating assembly. See hardware schedule for new door hardware.

3.7 APPLYING WATER REPELLANT WOOD PRESERVATIVE, PRIMER, AND PAINT (EXTERIOR ONLY)

A. Prepare surfaces or substrates for painting by lightly sanding.

B. Apply a water-repellant wood preservative to all surfaces of the door and frame.

C. Apply one coat of primer to all surfaces of the door and frame including putty beds and putty bars.

D. Lightly sand the surfaces after the primer has dried and clean off all dust.

E. Finish paint exterior surfaces to specified colors. Shop finish paint interior portions to restore interior color.

F. Prime and paint the door and frame in a controlled environment rather than in the field. Touch-up the paint on site immediately after installation.

3.8 REINSTALLING DOORS

A. Remove temporary panels – touch up frames.

B. Reinstall doors into jam to operate smoothly.

C. Reinstall historic hardware.

3.9 ADJUSTING

A. Adjust hardware for smooth operation and secure, weathertight closure.

3.10 CLEANING

A. Clean all surfaces of doors promptly after installation. Remove excess dirt, and other substances.

B. Clean both sides of all glass in doors. Wash glass clean of all residue. Mask glass prior to refinishing to prevent paint from adhering to surface of glass.

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

3.11 SCHEDULES

A. See Drawings for Door Schedule

END OF SECTION 08 01 53

SECTION 08 16 13

FIBERGLASS DOORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Base Bid:

1. Contractor shall provide all labor, materials, equipment and services necessary or incidental to the completion of all work of this section as shown on the drawings, herein specified, or otherwise required.
   a. Fiberglass Crawlspace Doors

B. Alternate Bid: None

1.2 REFERENCES

A. American Architectural Manufacturer Association (AAMA)

1. AAMA 1304; Voluntary Specification for Forced Entry Resistance of Side-Hinged Door Systems.

B. ASTM International

1. ASTM E283; Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
2. ASTM E330; Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Pressure Difference.
3. ASTM E331; Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
4. ASTM E547; Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.
5. ASTM E 1886; Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
6. ASTM E 1996; Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

C. National Fenestration Rating Council (NFRC)

1. NFRC 100; Procedure for Determining Fenestration Thermal Properties.
2. NFRC 200; Solar Heat Gain Coefficient and Visible Transmittance.

1.3 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

B. Shop Drawings: Submit shop drawings indicating details of construction, flashings and relationship with adjacent construction.

C. Verification Samples: For each factory-finished product specified, two samples, minimum size 6 inches (152 mm) square, representing actual finishes.

D. Quality Assurance Submittals:

1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.
2. Manufacturer Instructions: Provide manufacturer's written installation instructions.

E. Closeout Submittals: Refer to Division 01 Item 11 – Project Closeout.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: the installer has sufficient knowledge of installing the product for the size and scope of the project.

B. Certifications: NAMI certification label indicating assemblies meet the design requirements.

C. Mock-Up: Provide a mock-up for evaluation of installation techniques and workmanship.

1. Mock-ups shall incorporate surrounding construction, including wall assembly fasteners, flashing, and other related accessories installed in accordance with manufacturer's approved installation methods.
2. Do not proceed with remaining work until workmanship is approved by Architect.
3. Rework mock-up as required to produce acceptable work.
4. At Substantial Completion, approved mockups may become part of completed Work.
5. Demolish mockups and remove from site.

D. Pre-installation Meeting: Conduct pre-installation meeting on site two weeks prior to commencement of installation.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.

B. Deliver and store assembly materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.

1. Protect doors from weather and exposure to direct sunlight prior to installation, exposure of machined doors may compromise the internal reinforced material of the door.
2. Store in a dry, well-ventilated area off the floor, in a humidity and temperature-controlled facility. Recommended conditions: 30 to 50 percent relative humidity and 50 to 90 degrees F (10 to 32 degrees C).
3. During storage, do not remove paper or cardboard placed between products for shipment.

C. Handling: Handle with clean hands and equipment. Lift and carry the products when moving them. Do not drag across one another.

D. For optimal performance, new primed or unfinished products should be finished or painted with an even number of coats on all six sides as soon as possible after installation. Finishing is necessary because by nature, door construction materials are susceptible to the elements and changes in moisture levels can cause damage. Painting and finishing seals the surfaces, maintains, protects and enhances the beauty of the product by keeping it less susceptible to

debris and easier to clean. Keeping doors properly finished is the first step in effective maintenance.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions; temperature, humidity, and ventilation, within limits recommended by manufacturer for optimum results. Install only in vertical walls and when conditions are dry. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.7 WARRANTY

A. Manufacturer's Standard Warranty: Assemblies will be free from defects in materials and workmanship from the date of manufacture for the time periods indicated below:

1. Door Slab: 5 years.
2. Door Frame: 1 year.
3. Factory Prefinish: 1 year.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. JELD-WEN, Inc.

B. Pella Corporation

C. Therma-Tru Corp.

2.2 FIBERGLASS CRAWLSPACE DOORS

A. Full Plank Custom Wood Grain

1. Doors: Traditional Wood Grain finish:
2-Panel Doors

B. Structural Requirements – Provide doors capable of complying with requirements indicated:

1. Design pressure: 75 lbs. per sq. ft.

C. Impact (Windborne-Debris) Resistance

1. Doors capable of resisting impact from windborne debris, when tested in accordance with ASTM E1886 and ASTM E1996.

D. NFRC Requirements – Provide doors capable of complying with the following total door ratings:

1. U-Factor in accordance with NFRC 100.
2. Solar Heat Gain Coefficient (SHGC) in accordance with NFRC 200.

E. Materials:

1. Fiberglass Skins: Sheet Molding Compound (SMC), incorporating multiple layers of resins, tinted resins, base colors and reinforcing materials.
2. Stiles: Engineered wood (3.5 inch (88.9 mm) laminated strand lumber with maple cap).
3. Rails: Rot resistant composite rails.
4. Core: CFC Free, Polyurethane core of density 2.2 pcf.

F. Thickness: 1-3/4 inch

G. Door Style: Solid

H. Door Shape: Squared Top.

1. Panels per Face: Two
2. Top Panel Shape(s): Squared

I. Finish

1. Woodgrain Pattern

Color: To match P-1

J. Hardware: See Section 08 71 00 – Door Hardware

2.3 CONSTRUCTION ACCESSORIES

A. Flashing: Water resistant product that prevents water penetration.

B. Sealants: Refer to Section 07 92 00 - Joint Sealants.

2.4 FABRICATION

A. Skins are adhered to engineered wood frames with core materials and bonding agents that permanently lock skin to frame.

PART 3 - EXECUTION

3.1 GENERAL

A. Install doors in accordance with manufacturer's installation guidelines and recommendations.

3.2 EXAMINATION

A. Inspect door prior to installation.

B. Inspect rough opening for compliance with door manufacturer recommendations. Verify rough opening conditions are within recommended tolerances.

3.3 INSTALLATION

A. Install jamb assembly.

1. Caulk sill along outside edge and ½ inch in from edge of subfloor.
2. Set door unit into center of opening and tack in place.
3. Shim hinge then latch side jambs straight. Inspect jamb for square, level and plumb.
4. Fasten hinge side jamb to studs.
5. Verify door opens freely and weatherstrip meets door evenly.
6. Verify door sweep contacts threshold evenly.
7. Fasten latch side jamb to studs.

B. Caulk outside perimeter of door unit between brickmould and wall face, along front side of threshold, and between jamb sides and threshold.

3.4 PROTECTION

A. Protect installed doors from damage.

END OF SECTION 08 16 00

SECTION 08 51 60

WINDOW PROTECTION

PART 1 - GENERAL

1.1 WORK INCLUDES

A. Base Bid: Work includes, as indicated on Drawings:

1. General Contractor shall provide all labor, materials, equipment, and services necessary or incidental to the completion of all work of this section as shown, herein specified, or otherwise required.
   a. Section Includes:
      1) Furnish and install high window protection panels, complete with ventilation and graphics as shown in drawings and specified in this Section.

B. Option 1: Window Repairs – This Section is void if Option 1 is contracted.

1.2 DEFINITIONS

1. See Section 01 35 91 Historic Treatment Procedures.

1.3 RELATED WORK

C. Section 08 01 52 – Wood Window Repairs (Option 1)

D. Section 09 91 13 – Painting

E. Section 06 40 13 – Architectural Woodwork

1.2 SYSTEM PERFORMANCE

A. Water Resistance Test: With ventilation grille covered or in the closed position, the window shall be subjected to a water resistance test in accordance with ASTM E 331. When a positive static pressure of 2.5 PSF at 31 mph wind = Class 25 has been stabilized, 5 gallons of water per hour per square foot of window area shall be applied to the exterior face of the window, for a continuous period of 3 minutes. No water shall run over the interior edge of the sloped test buck sill.

1.3 SUBMITTALS

A. Product data for each product indicated including recommendations for their application and use. Include certifications substantiating those products comply with requirements.
   1. Details and fabrication methods.
   2. Detailed descriptions of the materials, methods, and equipment to be used for the window protection.
   3. Profiles and dimensions of individual components, including member thickness.

4. Product data for ventilation grille.
5. Graphic proof of window vinyl to be attached to each window.

B. Shop Drawings: Submit shop drawings indicating elevations of units, sections, fastenings, sizes, and profiles of new components to be fabricated, jointing methods, methods of installation and anchorage, details, and connections with other work showing location of each unit.

C. Color Samples:

1. Graphic Art of Vinyl

D. Historic Treatment Program: Submit before work begins, no later than five days before the preconstruction meeting.

1. Narrative with detailed descriptions of the materials, methods, and equipment to be used for the restoration work including protection of surrounding materials, temporary protections of openings and site during restoration operations.

E. Mock-up: Perform installation of one window protection panel, following requirements of this section to demonstrate materials and methods intended to be used in the finished work.

1. Obtain CO approval of mock-up before proceeding installation of additional window protection panel. Protect approved mock-up until completion of all work. Approved mock-up shall represent the minimum acceptable standard for windows protection panels.

F. Test Reports: Submit Independent Laboratory Test Reports verifying windows meet the specified requirements for water resistance.

1.4 QUALITY ASSURANCE

A. Qualifications: workers shall have minimum of five (5) years experience in cabinetry or rough carpentry work, or similar experience.

1.5 PREINSTALLATION CONFERENCE

A. General Contractor shall arrange conference at project site. General contractor, contractor performing the work’s project manager and site foreman, and CO shall be in attendance. If the work impacts other trades, a representative from those contractors shall also be in attendance. This shall take place before work of this section begins.

1. Review methods and procedures related to furnishing and installation of storm windows.
2. Temporary protections for existing window openings.
3. Construction Schedule
4. Verify availability of materials, Specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
5. Materials, material application, sequencing, tolerances, and required clearances.

1.6 WARRANTY

A. Installation Warranty: Contractor to furnish a written warranty against defects in the installation workmanship and materials for a period of three (3) years.

1.7 PROJECT CONDITIONS

A. Field Measurements: Check actual windows and frames on site and measure. Make sure substrate is sound for installation of new storm windows.

B. Protection of Door Openings: After removal of door, General Contractor shall provide exterior doors to maintain egress and access, fitted for each individual opening that is secured with by a non-destructive anchoring system. The panel shall be weathertight and not allow any water into the building at the exterior. Security requirements shall be coordinated with the University.

PART 2 - PRODUCTS

2.1 MATERIALS

A. CDX plywood: All interior and exterior panels shall be ¾" thick.

B. Vinyl Graphic Art: Vinyl art shall match the size, configuration of the existing windows.

C. Ventilation Grille and Screens: All window protection panels shall have a rectangular vent hole and screen located between muntins to allow for air flow and ventilation withig the air space adjacent to the wood windows.

2.2 WINDOW TYPE AND OPERATION

A. Type: All window protection shall be fixed panels, removable panels. The entire window protection panel shall be designed and constructed in a manner that allows for easy replacement of all parts or the entire unit.

2.4 FABRICATION

A. Weep System: The window protection panel shall have a minimum of two weep holes, uniformly positioned to allow for water to weep to the exterior of the storm window unit.

2.5 FINISHES

A. Vinyl Graphic Art Decal
   1. All exterior surfaces of the window protection panel shall have a vinyl graphic art decal that has an appearance of a muntin window.

B. Organic (Painted Finish)
   1. Finish all exposed areas of window protection panels and components with paint.
   2. Color to be determined by CO/COR.

PART 3 - EXECUTION

3.1 PREPARATION

A. Photograph each window to be protected.
B. Clean existing windows.

C. Before installing new window protection panel, examine window and all components and write a narrative describing each component.

3.2 EXAMINATION

A. Contractor to visit the job-site and make a complete survey of the Project prior to bid. All openings will be measured by the Contractor for proper sizing of the new window protection panels.

B. Inspect openings before installation to assure surfaces are clean and dry. Verify that window protection panel has been sized correctly and can attach to sound material.

3. 3 PREPARATION

A. Install only preservative treated lumber, as required, for all blocking. All blocking shall be the full length of the head, jambs and sill.

3.4 INSTALLATION

A. Window protection panels shall be installed as detailed in the Shop Drawings.

B. Plumb and align window protection panel faces in a single plane with the existing window. Erect window protection panels and accessories square and true, using blocking and anchors to maintain a permanent position.

C. Anchors should be not less than #8 non-magnetic, stainless steel screws. The length of the installation screws shall allow a minimum of one half (1/2) inch to penetrate into the window frame or blocking. Anchors must be adequate to handle thermal and building movement, and specified uniform load requirements.

D. Provide single-component or multi-component, low-modulus, non-sag sealant; comply with ASTM C920, Type S or M, Grade NS, Class 25

3.5 ADJUST AND CLEAN

A. Remove excess sealant, dirt, window labels and wipe dust off frame and glass.

END OF SECTION 08 51 60

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 WORK INCLUDES

A. Base Bid: General Contractor: Commercial Door Hardware for the following

1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:
1. Hinges
2. Lever Sets
3. Mortise Locks
4. Lock cylinders
5. Door stop
6. Thresholds
7. Weatherstripping
8. Astragal
9. Flush Bolts

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

D. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C – Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 – Access Control System Units.
4. Control Systems - System and Components Requirements.
5. UL 305 – Panic Hardware.
6. ULC-S132, Emergency Exit and Emergency Fire Exit Hardware.
7. ULC-S533 – Egress Door Securing and Releasing Devices.
8. ANSI/UL 437- Key Locks.
9. ULC-S328, - Burglary Resistant Key Locks.

1.2 RELATED WORK

A. Section 01 35 91 – Historic Treatment Plan

B. Section 02 41 19 – Selective Disassembly, Salvage and protection

C. Section 06 10 00 – Rough Carpentry

D. Section 07 92 00 – Joint Sealants

E. Section 08 01 53 – Wood Doors

F. Section 09 91 13 - Painting

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. 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. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

2. 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 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.
   h. Warranty information for each product.

3. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. 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.

C. Keying Schedule: After a keying meeting with the Park has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Park/CO/COR must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

D. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Item 11 - Closeout Procedures.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified 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.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Co/COR concerning both standard door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware for wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Review sequence of operation narratives for each unique access controlled opening.
3. Review and finalize construction schedule and verify availability of materials.
4. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

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

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

C. Deliver, as applicable, permanent keys, cylinders, cores, and related accessories directly to the Park via registered mail or overnight package service. Instructions for delivery to the Park shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. Special Warranty Periods:
1. Ten years for mortise locks and latches.

1.8 MAINTENANCE SERVICE

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

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

    a. Two Hinges: For doors with heights up to 60 inches.
    b. Three Hinges: For doors with heights 61 to 90 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

    a. Widths up to 3'-0": 4-1/2" standard or heavy weight as specified.
    b. Sizes from 3'-1" to 4'0": 5" heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

    a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate continuous hinge.
    b. Interior Doors: Heavy weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate continuous hinge

4. Accessory: Provide steeple tips at pins at all hinges
5. Exterior Doors: Non-Removable Pins (NRP).

6. Manufacturers:

   a. Hager Companies (HA).
   b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
   c. Stanley Hardware (ST).

Hinge type	Hager	McKinney	Stanley
BH-1	BB1168	T4A3786	FBB168
BH-2	BB1168 NRP	T4A3786 NRP	FBB168 NRP

2.3 CYLINDERS AND KEYING

A. Cylinders: Original manufacturer cylinders complying with the following:
   1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
   2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
   3. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
   4. Keyway: Provide Park with construction cores as required, provide permanent cores to Park.

B. Removable Cores: Provide removable cores as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware. Control keys and final keys and cores shall be transmitted to Park directly from the manufacturer via certified mail at substantial completion and shall under no circumstances be handled by the construction personnel. After the construction period, Contractor will remove the construction cores and install the final cores. The construction cores will be returned to the contractor.
   1. Manufacturers:

      a. Best Door Hardware, Inc. 5364 N. Northgate Peaks Dr. St. George, UT 84770, 720-6000282. Or Equal.

Cyl. Type	Best
C-1	1E74

C. Keying System: Each type of lock and cylinders to be factory keyed.

   1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
   2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Park.
   3. Existing System: Field verify and provide cylinders to match Park’s existing system.

D. Key Quantity: Provide the following minimum number of keys:

   1. Change Keys per Cylinder: Two (2)
   2. Master Keys (per Master Key Level/Group): Two (2).
   3. Construction Keys : Three (3).
   4. Provide 3 extra nickel silver key blanks.

E. Construction Keying: Provide temporary keyed construction cores.

2.4 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets

1. Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed.

    a. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

2. Mortise Locks: Minimum ¾" (19 MM) latchbolt throw one-piece radiused latchbolt made of self-lubricating stainless steel.
3. Deadbolt functions shall be one inch projection stainless steel construction. Both deadbolt and latchbolt to extend into lock case with reinforcing a minimum of 3/8" when fully extended.

4. Lock Trim Description:

    a. Levers

5. Locksets and latchsets to have self-aligning through-bolted trim.
6. Furnish locksets and latchsets with sufficient strike lip to protect door trim.
7. Provide locksets with 7 pin interchangeable core cylinders. All mortise cylinders shall have a concealed internal set screw for securing the cylinder to the lockset. The internal set screw will be accessible only by removing the core from the cylinder body with a control key.
8. Locksets must fit ANSI A115.1 door preparation.
9. Locksets and latchsets to have self-aligning through-bolted trim.
10. Locksets and latchsets must have the ability to change handing without opening case.
11. Auxiliary latch to be made of one-piece self-lubricating stainless steel.

12. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1.

13. Manufacturers:

    a. Best (BE) – 40H Series or Approved Equal

Lock type	dormaKABA Best
ML-1	40H Series 15M

B. Knurling: Where required by local code provide knurling or abrasive coating to all levers on doors leading to hazardous areas such as mechanical rooms, boiler and furnace rooms, janitor closets, and as otherwise required or specified.

2.5 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:
    a. Ives (I)
    b. Rockwood (RW).
    c. Trimco (TC).
    d. Or Equal

Bolt Type	I	Rockwood	Trimco
MFB-1	FB358	555/557	3910

2.6 DOOR STOPS AND HOLDERS

F. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

G. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

    a. Emtek, or equal

Stop Type	Emtek	Ives	
DS-1	2259	441B10B	613
DS-2	2251	FS17	613

2.7 ARCHITECTURAL SEALS

H. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

I. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

J. Manufacturers:

1. Zero International

2. Pemko Products; ASSA ABLOY
3. Reese Enterprises, Inc. (RE)
4. Or Equal

Type	Zero	Pemko	Reese
TH-1	-	157	S282
TH-2	104	-	-
TH-3	8655A	-	-
WS-1	-	2891AS	755
WS-2	-	290AS	754

2.8 FABRICATION

K. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.9 FINISHES

L. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

M. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

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

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, 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. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
1. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
2. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
3. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and 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 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 EXISTING HARDWARE

A. Clean and maintain existing hardware, as indicated on Drawings.
1. Buff or brush clean all metal components with abrasive appropriate to original finish.
2. Polish all brass and iron components with jewelers’ rouge on a cotton buffing wheel.
3. Clear coat all interior ferrous hardware with an acrylic lacquer coating and brass or iron hardware with a urethane coating.
4. Re-install hardware when restored doors are being re-hung and when new doors are installed.

3.5 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted.

Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.
2. Submit documentation of incomplete items in the following formats:

    a. PDF electronic file.
    b. Electronic formatted file integrated with the Openings Studio™ door opening management software platform.

3.6 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.

3.7 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Park occupancy.

3.8 DEMONSTRATION

A. Instruct Park's maintenance personnel to adjust, operate, and maintain mechanical door hardware.

3.9 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the Park and CO/COR. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the CO/COR with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.

2. The supplier is responsible for handing and sizing all products.

3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

Hardware Sets:

H1 Set 101 Exterior Wood	**Type**	**Finish**
1-1/2 pairs - Hinges	BH-1	613
1 - Lock cylinder	C-1	613
1 - Mortise Lockset	ML-1	613
2 - Door stops	DS-1	613
1 - Thresholds	TH-1	313
3 - Weatherstripping	WS-1	black
1 - Metal Edge Astragal	By Door Manufacturer	-
1 - Flush Bolt	FB-1	643e716

H2 Set 102 Interior Wood

1 - Door stop	WS-1	613

*Note: Maintain Existing hardware, clean and reinstall

H3 Set (103) Exterior Wood

1 pair - Hinges	BH-2	613
1 - Lock cylinders.	C-1	613
1 - Mortise Lockset	ML-1	613
1 - Door stop	DS-2	613
1 - Thresholds	TH-2	Alum
3 - Weatherstripping	WS-1	black

H3 Set (104 (Interior) Wood

1 pair - Hinges	BH-1	613
1 - Lock cylinders.	C-1	613
1 - Mortise Lockset	ML-1	613
1 - Lever Sets	LS-1	613
1 - Door stop	DS-2	613
1 - Thresholds	TH-3	Alum

END OF SECTION 08 71 00

SECTION 09 91 13

PAINTING

PART 1 - GENERAL

1.1 WORK INCLUDES:

A. Interior and Exterior Painting:

1. General Contractor shall provide all labor, materials, equipment, and services necessary or incidental to the completion of all work of this section as shown on the drawings, herein specified, or otherwise required.
   a. Concealed surfaces not to be painted include:
   b. Interior surfaces unless structural work occurs or touch up is required due to moving of the structure.
   c. Wall or ceiling surfaces in the Basement/Foundation spaces,
   d. Foundations
   e. Section Includes:
      1) Primers.
      2) Finish coatings.

1.2 RELATED WORK

A. Section 06 40 13 – Exterior Architectural Woodwork

B. Section 08 01 52 – Wood Window Restoration

C. Section 08 01 53 – Wood Doors

1.3 ACTION SUBMITTALS

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

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. 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.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.5 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Behr Process Corporation (Behr).
2. Benjamin Moore & Co. (BM).
3. Sherwin-Williams Co. (S-W).

B. Products: Subject to compliance with requirements, provide one of the products listed in the Exterior Painting Schedule for the paint category indicated.

2.2 PAINT, 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.

B. Colors:
1. P-1 to match existing paint color

2.3 EXTERIOR PAINTING SCHEDULE

A. New and Existing Siding, Trim, Frames and Casings
a. Flat Finish
b. 2 coats
B. New and Existing Wood Doors and Windows
a. Semi-gloss finish

b. 2 coats

C. Steel and Iron Substrates:

1. Alkyd System:
   a. Prime Coat: Primer, alkyd, anticorrosive, for metal.
      1) BEHR: Kilz Complete Oil-Based Primer
      2) BM: Super Spec Alkyd Metal Primer P06.
      3) S-W: Kem Bond HS, B50 Series.
   b. Topcoat: Alkyd, exterior, semi-gloss (MPI Gloss Level 5).
      1) BEHR: Int/Ext Oil-Based Semi-Gloss Enamel 3800
      2) BM: Super Spec HP Alkyd Semi-Gloss Enamel P24.
      3) S-W: Metalastic DTM, B55 Series.

D. Galvanized-Metal Substrates:
1. Latex System:
   a. Prime Coat: Primer, galvanized, water based.
      1) Behr: Behr Premium Plus Int/Ext Multi-Surface Primer & Sealer 436.
      2) BM: Ultra Spec DTM Acrylic Semi-Gloss Enamel HP29.
      3) S-W: Pro Industrial ProCryl WB Metal Primer, B66-310 Series.
   b. Topcoat: Latex, exterior, semi-gloss (MPI Gloss Level 5).
      1) Behr: Behr Direct To Metal Semi-Gloss Enamel 3200.
      2) BM: Ultra Spec DTM Acrylic Semi-Gloss Enamel HP29.
      3) S-W: Pro Industrial Acrylic Semi-Gloss, B66-651 Series.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes General Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer’s written instructions and recommendations in “MPI Architectural Painting Specification Manual” applicable to substrates and paint systems indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: CO reserves the right to invoke the following procedure at any time and as often as they deem necessary during the period when paints are being applied:

1. Construction Manager Agent will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of the Contractor performing the work.
2. Testing agency will perform tests for compliance of paint materials with product requirements.
3. Construction Manager Agent may direct Contractor performing the work to stop applying paints if test results show materials being used do not comply with product requirements. Contractor performing the work shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor performing the work will be required to remove rejected materials

   from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

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

END OF SECTION 09 91 13

SECTION 26 00 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 DESCRIPTION

A. The intent of the Division 26 specifications and the accompanying drawings is to provide a complete and workable electrical system as shown, specified and required by applicable codes. Include all work specified in Division 26 and shown on the accompanying drawings.

B. The drawings that accompany the Division 26 specifications are diagrammatic. They do not show every offset, bend, tee, or elbow which may be required to install work in the space provided and avoid conflicts. Follow the drawings as closely as is practical to do so and install additional bends, offsets and elbows where required by local conditions from measurements taken at the building, subject to approval, and without additional cost to the contract.

C. Prior to sending the submittals the contractor shall visit the site, determine pipe routing, develop shop drawings, submit product data and submit the shop drawings.

D. All materials and installation methods shall conform to the applicable standards, guidelines and codes referenced in the specification section.

1.2 REFERENCES

A. ANSI: American National Standards Institute

B. IBC: International Building Code

C. ICEA: Insulated Cable Engineers Association

D. IEEE: Institute of Electrical and Electronic Engineers

E. NEC: National Electrical Code

F. NEMA: National Electrical Manufacturers Association

G. NFPA: National Fire Protection Association

H. OSHA: Occupational Safety and Health Administration

I. UL: Underwriters Laboratories FM: FM Global

J. ICC: International Code Council

K. NEMA: National Electrical Manufacturers Association
   1. NEMA MG1: Motors and Generators

L. NFPA: National Fire Protection Association

1.3 CONTRACTOR'S RESPONSIBILITY PRIOR TO SUBMITTAL OF BID:

A. The Contractor is responsible for constructing complete and operating systems. The Contractor acknowledges and understands that the Contract Documents are a scaled two-dimensional representation of a three-dimensional spaces, subject to interpretation. These contract drawings are not perfect, include interpreted codes, three-dimensional conflicts, and necessitates the installing contractor perform field coordination. The contractor has a responsibility to resolve deficiencies prior to ordering material, providing coordination drawings, or starting installation. The Contractor shall carefully study the entire set of contract documents and provide written correspondence to the design team demonstrating any deficiencies identified by the Contractor. Each subcontractor shall study the documents and report any deficiencies. Any deficiencies shall be communicated to the CO via a written request for information.

B. Review the documents for compliance with local and state codes, ICC, NFPA, NEC and UL. Any items found to be non-compliant with the aforementioned standards shall result in a written request for information from the CO.

C. The Contractor shall resolve all reported deficiencies with the CO prior to awarding any subcontracts, ordering material, or starting any work with the Contractor's own employees. Any work performed prior to receipt of instructions from the Design Team will be done at the Contractor's risk.

D. Examination of Drawings:

1. The drawings for the mechanical work are completely diagrammatic, intended to convey the scope of the work and to indicate the general arrangements and locations of equipment, outlets, etc., and the approximate sizes of equipment. Locations of existing equipment are based on existing drawings; it is the responsibility of the contractor to verify the location and orientation of equipment prior to submitting shop drawings for CO for review.

1.4 QUALITY ASSURANCE

A. Materials and equipment shall be new. Work shall be of high quality, free of faults and defects. All products shall be installed per manufacturer requirements, shall meet the intent of the state and local codes.

B. All equipment shall fit in the space provided. The contractor shall visit the site, verify the existing conditions, and adjust the pipe routing to accommodate any conflicts identified during the site visit.

C. Systems shall be built and installed to deliver their full rated capacity at the efficiency for which they were designed.

D. The entire electrical system shall operate at full capacity without objectionable noise or vibration.

E. Materials and Equipment:

1. Each piece of equipment provided shall meet all detailed requirements of the drawings and specifications and shall be suitable for the installation shown.
2. Where two or more units of the same class of equipment are provided, use products of the same manufacturer; component parts of the entire system need not be products of the same manufacturer.

F. Workmanship:

1. Install all materials in a neat and workmanlike manner.
2. Follow the manufacturer's directions. If they are in conflict with the contract documents, obtain clarification before starting work.

G. Cutting and Patching:

1. Cutting, patching and repairing for the proper installation and completion of the work specified in this division, including plastering, masonry work, concrete work, carpentry work, firestopping, and painting, shall be performed by skilled craftsmen of each respective trade in conformance with the appropriate division of work. Additional openings required in building construction shall be made by drilling or cutting.
2. Fill holes which are cut oversize so that a tight fit is obtained around the objects passing through.
3. Do not pierce beams or columns.
4. New or existing work that is cut or damaged shall be restored to its original condition. Where alterations disturb existing finishes, the surfaces shall be repaired, refinished, and left in the condition existing prior to commencement of work.
5. New or existing work that is cut or damaged shall be restored to its original condition. Where alterations disturb existing finishes, the surfaces shall be repaired, refinished, and left in the condition existing prior to commencement of work.

H. Qualifications:

1. The contractor shall be licensed in the state and with the local municipality in which the project is located.
2. The products provided by the contracting team shall be as listed in the specifications. Any products provided without listed manufactures, specifically sundries, shall be manufactured by reputable companies.
3. Exercise care in transporting and handling to avoid damage to materials. Store materials on the site to prevent damage. Keep materials clean, dry and free from harmful conditions. Immediately remove any materials that become wet or that are suspected of becoming contaminated with mold or other organisms.
4. Coordinate the installation of heavy and large equipment with the General Contractor and/or CO. If the Contractor does not have prior documented experience in rigging and lifting similar equipment, he/she shall contract with a qualified lifting and rigging service that has similar documented experience. Follow all equipment lifting and support guidelines for handling and moving.
5. The Contractor is responsible for transporting equipment into the area of work. The contractor shall review site prior to bid for path locations and any required building modifications to allow movement of equipment. The contractor shall coordinate his/her work with other trades.

6. All Contractors and subcontractors shall employ only workers skilled in their trades. Provide certifications as identified in the following division 26 specifications or otherwise identified in the Division 1 specifications.
7. Start-up of equipment shall be performed by factory trained and certified personnel that are familiar with the product. Preference is that start-up is provided by the factory.

1.5 PROJECT CONDITIONS

A. Coordinate exact requirements governed by actual job conditions. Check all information and report any discrepancies before fabricating work. Report changes in time to avoid unnecessary work. Coordinate with building management to identify dumpster locations, staging areas, delivery procedure, and shutdowns.

B. The building will not be occupied during the construction process but the contractor will be responsible for minimizing smoke, dust, debris, and noise.

C. Torch and grinding work shall employ source capture devices to mitigate dust, fumes and metal shavings. Use of flame shall employ carbon and HEPA filtration. Obtain necessary approvals from the CO two weeks prior to any of the above work.

D. Obtain approval from CO at least two weeks prior to shutdowns of any electrical systems outside the scope area.

1.6 RECORD DOCUMENTS

A. Refer to the division 1 specifications for information on record documents and closeout procedures.

B. Contractor shall maintain at the job site a separate and complete set of electrical drawings, specifications, and satisfactorily reviewed shop drawings. The contractor shall clearly and permanently mark in complete detail all changes made to the mechanical systems. The red lines shall be made on the satisfactorily reviewed shop drawings.

C. Mark drawings to indicate revisions to piping and ductwork, size and location, both exterior and interior; including locations of coils, dampers, other control devices, filters, and other units requiring periodic maintenance or repair; actual equipment locations, dimensioned from column lines; actual inverts and locations of underground piping; concealed equipment, dimensioned from column lines; mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (e.g., traps, strainers, expansion compensators, tanks, etc.); Change Orders; concealed control system devices.

D. Mark specifications to show approved substitutions; Change Orders, and actual equipment and materials used.

E. Record changes daily and keep the marked drawings available for CO examination at any normal work time.

F. Upon completing the job, and before final payment is made, give the marked-up drawings to the CO.

1.7 WARRANTY

A. Provide one-year warranty, unless otherwise noted, to the CO for all fixtures, equipment, materials, and workmanship.

B. The warranty period for all work in this Division of the specifications shall commence on the date of substantial completion. Only the government can establish that the contract has been substantially completed. The contractor shall verify the substantial completion date with the government to ensure the appropriate warranty start date.

C. Warranty requirements shall extend to correction, without cost to the CO, of all Work found to be defective or nonconforming to the contract documents. The Contractor shall bear the cost of correcting all damage resulting from defects or nonconformance with contract documents.

1.8 SCOPE OF WORK

A. The contractor shall visit the site to familiarize themselves with the project, coordinate with other trades and to plan for execution of the work. Coordinate efforts with the general contractor so that work efforts are sequenced with the other trades.

B. Coordinate all power shutdowns with the general contractor and the CO. Provide temporary power to accommodate construction efforts during power outages. Coordinate amongst the trades to provide adequate power during construction. Provide temporary lighting.

C. Provide all effort to disconnect electrical utilities to accommodate the raising and lowering of the building.

D. Provide all efforts to reconnect the electrical utilities to accommodate the raising and lowering of the building. Provide conduit, wire, pull boxes, splice boxes and other materials necessary to extend utilities to facilitate reconnection.

E. Perform testing to ensure that disconnection and reconnection of utilities has been successfully performed.

F. Coordinate all shutdowns with the property manager. Provide fourteen-day notice.

G. Provide closeout documents, National Park Service training.

H. Participate in commissioning.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Supply all materials to complete and provide the operating system specified, unless it is specifically indicated that materials are being furnished by others, or that existing equipment shall or may be reused.

B. All materials shall be new and meet the requirements of these specifications. Materials shall be subject to approval via the submittal process.

C. All components and equipment provided and normally tested and labeled by Underwriters Laboratories (UL), or similar recognized third-party approval authority, shall be so labeled.

2.1 GENERAL SUPPORT AND ANCHORING HARDWARE

A. All anchors, nuts, washers, and bolts shall be rust resistant, plated type, unless specified otherwise. Anchors, nuts, washers, and bolts for exterior use shall be stainless steel.

B. Brackets and miscellaneous hardware shall be rust resistant, plated type, unless specified otherwise.

C. Bolts associated with lighting fixture installation shall be applied with anti-seize lubricant such as Never-Seez, or equal, prior to installation.

D. Metal framing systems commonly referred to as Uni-Strut shall be Dura-Green epoxy coated finish or equal.

E. Clamps, brackets, and similar hardware utilized with the channel support system shall be of the same manufacturer and be similarly galvanized.

2.2 SEALANT

A. General Purpose: Tremco Dymeric Sealant, or equal.

B. Floor Penetration Sealant: Hydroment Ultra-Set Sealant by Bostik, Inc., or pre-bid approved equal.

C. Firestop Sealant: See Section 07 84 00, Firestopping.

PART 3 - EXECUTION

3.1 DEMOLITION AND SALVAGE

A. Remove or relocate electrical piping, wiring, devices, and other equipment encountered in existing areas affected by this work as indicated on the drawings. Status of items not indicated for demolition on the drawings shall be verified prior to their removal.

3.2 CLEANING

A. Clean electrical equipment, fixtures and piping of stampings and markings (except those required by codes), iron cuttings, and other refuse.

B. Clean scratched or marred painted surfaces of rust or other foreign matter and paint with matching color industrial enamel, except as otherwise noted.

3.3 EQUIPMENT PROTECTION

A. Keep electrical pipe and conduit openings closed by means of plugs or caps to prevent the entrance of foreign matter. Protect electrical piping, conduit, fixtures, equipment, and apparatus against dirty water, chemical, or mechanical damage both before and after installation. Restore damaged or contaminated piping, fixtures, equipment, or apparatus to original conditions or replace at no added cost to the contract.

B. Protect bright finished shafts, bearing housings, and similar items until in service. No rust will be permitted.

C. Cover or otherwise suitably protect equipment and materials stored on the job site.

3.4 ACCESSIBILITY

A. Conveniently locate panels, junction boxes, and other equipment or specialties requiring frequent reading, adjustments, inspection, repairs, or removal and replacement.

3.5 ELECTRICAL EQUIPMENT

A. No piping, ducts, leak protection apparatus, or other equipment foreign to the electrical installation shall be located in the dedicated electrical space around electrical equipment.

B. The area above the dedicated electrical space shall be permitted to contain foreign systems, provided protection is installed to avoid damage to the electrical equipment from condensation, leaks, or breaks in such foreign systems.

C. Outdoor electrical equipment shall be protected from accidental spillage or leakage from piping systems.

3.6 EQUIPMENT CONNECTIONS

A. Make final connections to equipment in accordance with manufacturer’s instructions, shop drawings, and as indicated.

B. Provide liquid tight flexible metallic conduit at vibrating equipment.

3.7 CLEANING

A. Remove packaging, wire clippings, and all other unused material or rubbish.

END OF SECTION 26 00 00

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Stripping and stockpiling rock.
6. Removing above- and below-grade site improvements.
7. Disconnecting, capping, sealing, reconnecting site utilities
8. Temporary erosion and sedimentation control.

B. Related Requirements:

1. Division 01 – “Item 2 – Protecting Existing Utilities”

2. Division 01 – Item 3 – Contractor’s Use of Premises”

3. Division 01 – Item 10 – Temporary Services.”

4. Section 31 50 00 “Excavation Support and Protection”

1.2 DEFINITIONS

A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.

D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction.

E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1.4 MATERIAL NATIONAL PARK SERVICESHIP

A. Except for materials indicated to be stockpiled or otherwise remain National Park Service property, cleared materials shall become The Parks property and shall be removed from Project site.

1.5 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.

B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the National Park Service.
2. Provide alternate routes around closed or obstructed trafficways if required by the National Park Service.

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on National Park Service's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

E. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material:

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to requirements in Section 01 56 39 - Temporary Tree and Plant Protection.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to the National Park Service.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of the National Park Service.

B. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations.

3.4 EXISTING UTILITIES

A. Locate, identify, disconnect, and seal or cap utilities and reconnect as required.

1. Arrange with utility companies to shut off indicated utilities.

B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by National Park Service or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify CO not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without CO written permission.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches (150 mm)] in a manner to prevent intermingling with underlying subsoil or other waste materials.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off National Park Service's property.

END OF SECTION 31 10 00

SECTION 31 50 00

EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes temporary excavation support and protection systems.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Shop Drawings: For excavation support and protection system, prepared by or under the supervision of a qualified professional engineer.

B. Delegated-Design Submittal: For excavation support and protection systems, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:

1. Professional Engineer: Experience with providing delegated-design engineering services of the type indicated, including documentation that engineer is licensed in the state in which Project is located.

B. Contractor Calculations: For excavation support and protection system. Include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Existing Conditions: Using photographs, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by inadequate performance of excavation support and protection systems. Submit before Work begins.

1.5 CLOSEOUT SUBMITTALS

A. Record Drawings: Identify locations and depths of capped utilities, abandoned-in-place support and protection systems, and other subsurface structural, electrical, or mechanical conditions.

1.6 FIELD CONDITIONS

A. Interruption of Existing Utilities: Do not interrupt any utility-serving facilities occupied by the National Park Service or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:

1. Notify CO/COR and the National Park Service no fewer than two days in advance of proposed interruption of utility.
2. Do not proceed with interruption of utility without National Park Services written permission.

B. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks, and record existing elevations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design excavation support and protection systems to resist all lateral loading and surcharge, including but not limited to, retained soil, groundwater pressure, adjacent building loads, adjacent traffic loads, construction traffic loads, material stockpile loads, and seismic loads, based on the following:

1. Compliance with OSHA Standards and interpretations, 29 CFR 1926, Subpart P.
2. Compliance with requirements of the National Park Service.
3. Compliance with utility company requirements.
4. Compliance with railroad requirements.

2.2 MATERIALS

A. Provide materials that are either new or in serviceable condition.

B. Structural Steel: ASTM A36/A36M, ASTM A690/A690M, or ASTM A992/A992M.

C. Steel Sheet Piling: ASTM A328/A328M, ASTM A572/A572M, or ASTM A690/A690M; with continuous interlocks.

1. Corners: Roll-formed corner shape with continuous interlock.

D. Wood Lagging: Lumber, mixed hardwood, nominal rough thickness of size and strength required for application.

E. Cast-in-Place Concrete: ACI 301, of compressive strength required for application.

F. Reinforcing Bars: ASTM A615/A615M, Grade 60 deformed.

G. Tiebacks: Steel bars, ASTM A722/A722M.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. Locate excavation support and protection systems clear of permanent construction, so that construction and finishing of other work is not impeded.

B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the National Park Service.
2. Provide alternate routes around closed or obstructed traffic ways if required by the National Park Service.

C. Install excavation support and protection systems without damaging existing buildings, structures, and site improvements adjacent to excavation.

3.2 SOLDIER PILES AND LAGGING

A. Install steel soldier piles before starting excavation.

1. Extend soldier piles below excavation grade level to depths adequate to prevent lateral movement.
2. Space soldier piles at regular intervals not to exceed allowable flexural strength of wood lagging.
3. Accurately align exposed faces of flanges to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.

B. Install wood lagging within flanges of soldier piles as excavation proceeds.

1. Trim excavation as required to install lagging.
2. Fill voids behind lagging with soil, and compact.

C. Install wales horizontally at locations indicated on Drawings and secure to soldier piles.

3.3 SHEET PILING

A. Before starting excavation, install one-piece sheet piling lengths and tightly interlock vertical edges to form a continuous barrier.

B. Accurately place the piling using templates and guide frames unless otherwise recommended in writing by the sheet piling manufacturer.

1. Limit vertical offset of adjacent sheet piling to 60 inches.
2. Accurately align exposed faces of sheet piling to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.

C. Cut tops of sheet piling to uniform elevation at top of excavation.

3.4 TIEBACKS

A. Drill, install, grout, and tension tiebacks.

B. Test load-carrying capacity of each tieback, and replace and retest deficient tiebacks.

1. Have test loading observed by a qualified professional engineer responsible for design of excavation support and protection system.

C. Maintain tiebacks in place until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.5 BRACING

A. Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move brace, install new bracing before removing original brace.

1. Do not place bracing where it will be cast into or included in permanent concrete work unless otherwise approved by CO/COR.
2. Install internal bracing if required to prevent spreading or distortion of braced frames.
3. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.6 MAINTENANCE

A. Monitor and maintain excavation support and protection system.

B. Prevent surface water from entering excavations by grading, dikes, or other means.

C. Continuously monitor vibrations, settlements, and movements to ensure stability of excavations and constructed slopes and to ensure that damage to permanent structures is prevented.

3.7 FIELD QUALITY CONTROL

A. Survey-Work Benchmarks: Resurvey benchmarks regularly during installation of excavation support and protection systems, excavation progress, and for as long as excavation remains open.

1. Maintain an accurate log of surveyed elevations and positions for comparison with original elevations and positions.
2. Promptly notify CO/COR if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

B. Promptly correct detected bulges, breakage, or other evidence of movement to ensure that excavation support and protection system remains stable.

C. Promptly repair damages to adjacent facilities caused by installation or faulty performance of excavation support and protection systems.

3.8 REMOVAL AND REPAIRS

A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and earth and hydrostatic pressures.

1. Remove in stages to avoid disturbing underlying soils and rock or damaging structures, pavements, facilities, and utilities.
2. Remove excavation support and protection systems to a minimum depth of 48 inches below overlying construction, and abandon remainder.
3. Fill voids immediately with approved backfill compacted to density specified in Section 311000 "Site Clearing".
4. Repair or replace, as approved by CO/COR, adjacent work damaged or displaced by removing excavation support and protection systems.

B. Leave excavation support and protection systems permanently in place.

END OF SECTION 31 50 00

August Mack
ENVIRONMENTAL

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7830 North Central Drive, Suite B ▪ Lewis Center, Ohio 43035

April 7, 2023

Mr. Robin Whitehurst
Bailey Edward
35 E. Wacker Drive, Suite 2800
Chicago, Illinois 60601

Re: Final Report
Pre-Alteration Lead-Based Paint Survey
Fee Memorial Church
Hall, Kentucky
August Mack Project Number JW2279.930

Dear Mr. Whitehurst:

August Mack Environmental, Inc. (August Mack) has completed a pre-alteration lead-based paint (LBP) survey of the Fee Memorial Church (building) in Hall, Kentucky. The survey aimed to determine if LBP is present on or within the building before its scheduled renovation. Mr. Dylan Petriko, a United States Environmental Protection Agency (U.S. EPA) accredited Lead Inspector/Risk Assessor for August Mack, conducted the survey activities on February 3, 2023. A copy of the inspector's license is provided as an attachment. A summary of the screening activities and laboratory analytical results is presented in the following sections.

A walk-through and inspection of the building were performed to identify the various painted surfaces with the potential to contain lead. As a part of the inspection, representative paint chip samples were collected from the various painted surfaces identified. The survey activities were conducted in general accordance with the United States Department of Housing and Urban Development (HUD) Guidelines Chapter 7 (revised 1997). In addition, all paint chip samples were collected following the *American Society of Testing and Materials (ASTM) Standard E 1729, "Standard Practice for Field Collection of Dried Paint Samples for Lead Determination by Spectrometry Techniques"*.

All paint chip samples were collected and submitted to EMSL Analytical, Inc. (EMSL), for analysis using flame atomic absorption spectrophotometer (AAS)., A copy of the laboratory analytical report is provided as an attachment, and a sample location diagram depicting the paint chip sample locations has been provided as **Figure 1**.

The HUD and the U.S. EPA define LBP as any painted or coated surface containing lead in concentrations equal to or greater than 0.5 percent by weight (≥0.5%wt.). However, the

Occupational Safety & Health Administration (OSHA) has no set designation or definition for LBP. According to OSHA, any painted or coated surface containing any concentration of lead where an employee may be occupationally exposed is regulated by the *OSHA Construction Industry Lead Standard 29 CFR 1926.62*. A table summarizing the results of the paint chip sampling is provided below.

Lead Paint Chip Sampling Results
February 3, 2023

Sample #	Paint Color	Location	Laboratory Detection Limit (%wt)	Lead Concentration (%wt)
L-1	White	Exterior Siding	0.0080	0.042
L-2	Cream	Interior upper wood paneling	0.0080	0.012
L-3	Beige	Interior lower wood paneling	0.0080	<0.0080
L-4	Blue	Wood Floor	0.0097	0.15

%wt = percent by weight

As shown above, none of the painted surfaces sampled were determined to be LBP as defined by HUD and U.S. EPA. However, most of the painted surfaces tested as part of the survey were determined to contain low-level lead concentrations (less than 0.5%wt). Therefore, for occupational exposure purposes, any activities that may impact these painted components with potential for lead exposure would be regulated by the *OSHA Construction Industry Lead Standard, OSHA 29 CFR 1926.62*.

August Mack has taken precautions to survey the various painted surfaces expected to be impacted as part of the Fee Memorial Church project. However, it should be recognized that only readily accessible painted surfaces were tested for lead, and therefore, any painted or coated components that may be located within wall cavities and in other inaccessible areas were not tested as part of this survey.

We trust that this submittal is responsive to your needs and appreciate the opportunity to provide you with these environmental services. Please feel free to contact us if you have any questions.

Sincerely,

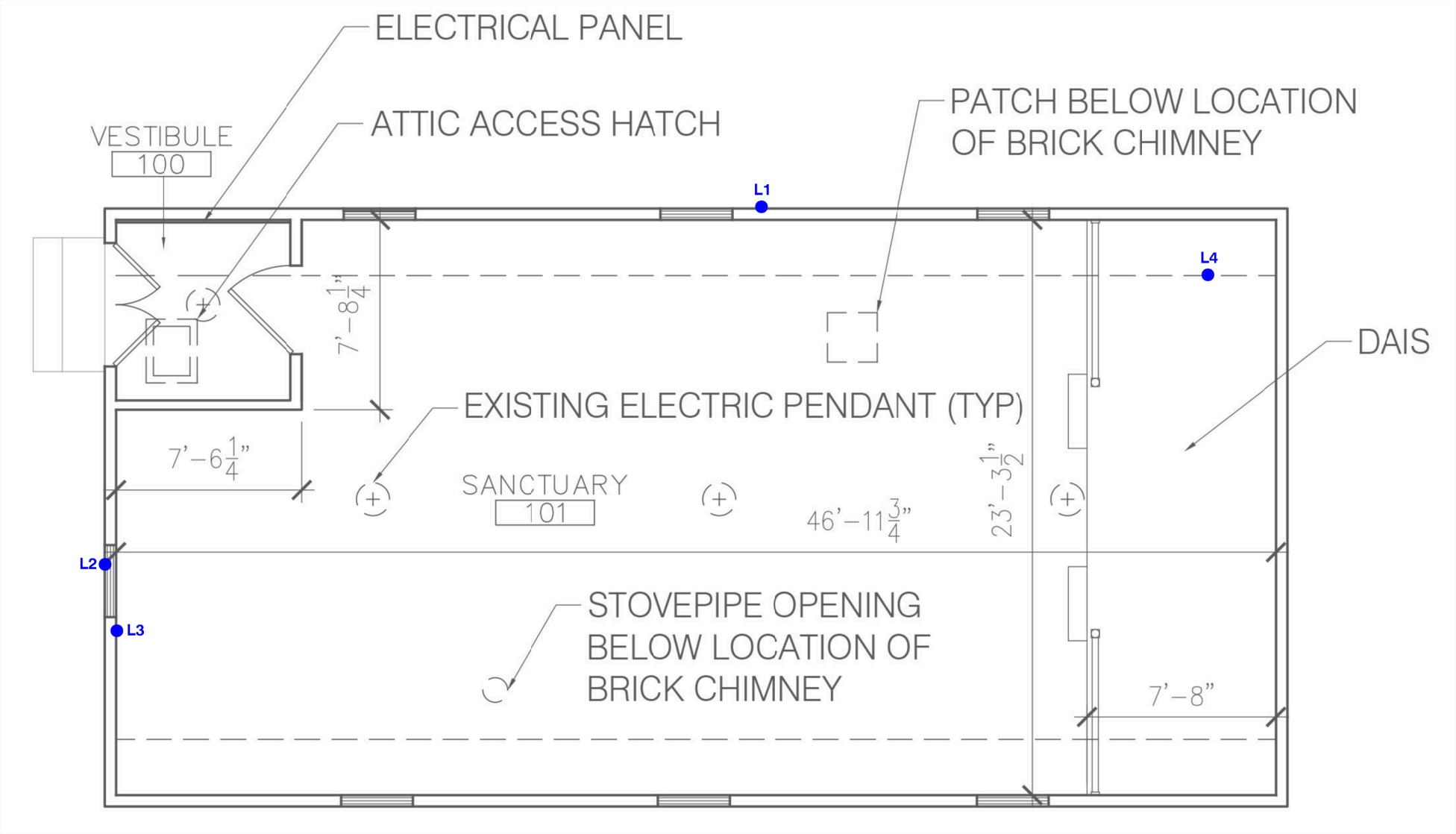
Matt Brandvik
Building Sciences Manager
mbrandvick@augustmack.com
317.721.0703

Aaron Manka
Principal, Building Sciences
amanka@augustmack.com
317.503.6550

Attachments

FIGURES

Figure 1: Sample Location Diagram



1302 N. MERIDIAN ST., STE. 300
INDIANAPOLIS, INDIANA 46202
(317) 916-8000
(317) 916-8001 FAX
August Mack ENVIRONMENTAL

Pre-Renovation Lead Based Paint (LBP) Survey
Fee Memorial Church

Hall, Kentucky

Lead Based Paint Sample Location Map

PROJECT No.:	FILENAME:		DATE:
JW2279.930	I:\2022\Projects\JW2279\Figures\Base.dwg		02/07/2023
DRAWN BY:	MODIFIED BY:	SCALE:	FIGURE:
Client Provided	BA	Not To Scale	1

LEGEND

● = **Lead Based Paint Sample Location**

N

ATTACHMENT

Inspector License and Accreditation

Indiana State Department of Health

Dylan Max Petriko

Lead Risk Assessor License # IND001995

Effective: 12/28/2021
Birth Date: 03/06/1998
Height: 5-10
Weight: 155

Expiration: 12/28/2024
Gender: M
Eye Color: Brown
Hair Color: Brown

STATE FORM 49122 (R2 / 10-19)

Indiana State Department of Health
2 North Meridian Street, 6th Floor
Indianapolis, Indiana 46204

Lead Risk Assessor

Certificate Number	Expiration Date
IND001995	12/28/2024

Dylan Max Petriko

Kristina Box, MD, FACOG
Kristina Box, MD, FACOG
State Health Commissioner
Indiana State Department of Health

ATTACHMENT

Laboratory Analytical Report

EMSL Analytical, Inc.
6340 CastlePlace Dr., Indianapolis, IN 46250
Phone/Fax: (317) 803-2997 / (317) 803-3047
http://www.EMSL.com indianapolislab@emsl.com

EMSL Order:	162302639
CustomerID:	AUGM50
CustomerPO:	
ProjectID:	

Attn: **Dylan Petriko**
August Mack Environmental, Inc.
1302 North Meridian Street
Suite 300
Indianapolis, IN 46202

Phone:	(317) 916-8000
Fax:	(317) 916-8001
Received:	2/6/2023 08:58 AM
Collected:	2/6/2023

Project: **JW2279.930 Bailey-Edwards Nicholasville Church Lead**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample	*Description*	*Collected*	*Analyzed*	*Weight*	*RDL*	*Lead* **Concentration**
L1		2/6/2023	2/9/2023	0.2505 g	0.0080 % wt	0.042 % wt
162302639-0001	Site: Exterior siding - Wall A - Wood					
L2		2/6/2023	2/9/2023	0.2582 g	0.0080 % wt	0.012 % wt
162302639-0002	Site: Interior upper paneling - Wall A - Wood					
L3		2/6/2023	2/9/2023	0.2594 g	0.0080 % wt	<0.0080 % wt
162302639-0003	Site: Interior lower paneling - Wall A - Wood					
L4		2/6/2023	2/9/2023	0.2069 g	0.0097 % wt	0.15 % wt
162302639-0004	Site: Wood floor - Floor - Wood					

Aleksandrea Kuchenbrod

Aleksandrea Kuchenbrod, Inorganic Chemistry
Lab Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.
* Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.

Samples analyzed by EMSL Analytical, Inc. Indianapolis, IN AIHA LAP, LLC-ELLAP Accredited #157245, OH E10040

Initial report from 02/13/2023 08:22:13

162302639

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

QAY7-ATP7-UX2H

Client Information
August Mack Environmental, Inc.
Indianapolis, IN

Project Overview

PO Number	
Project Name	JW2279.930 Bailey-Edwards Nicholasville Church Lead
Project ID	
Client	
Special Instructions	
Bill To	AUGM50
Report to Contact	Aaron manka Matt Brandvik Rhiannon benge
Report to Email	

Project Site

Building Type	Commercial
Address 1	316 Church Street
Address 2	
City	Nicholasville
State	KY
Country	US

Testing Laboratory
EMSL Analytical
6340 CastlePlace Dr.
Indianapolis, IN

Sample ID	Description	Location	Date/Time Collected	Matrix / Test Method	TAT	Result Format	Notes
L1	Wall A / Wood	Exterior siding	Feb 06, 2023 8:27 AM	Lead Chip / C-Lead by FLAA	1 Week	% Weight	
L2	Wall A / Wood	Interior upper paneling	Feb 06, 2023 8:27 AM	Lead Chip / C-Lead by FLAA	1 Week	% Weight	
L3	Wall A / Wood	Interior lower paneling	Feb 06, 2023 8:27 AM	Lead Chip / C-Lead by FLAA	1 Week	% Weight	
L4	Floor / Wood	Wood floor	Feb 06, 2023 8:27 AM	Lead Chip / C-Lead by FLAA	1 Week	% Weight	

Sampled By / Date: Dylan Pego — Feb 06, 2023

Relinquished By / Date: Dylan Pego — Feb 06, 2023

Received (Lab) / Date: M. Worley 2/6/23 8:58am WI

Page 1 of 1

OrderID: 162302639

August Mack
ENVIRONMENTAL

317.916.8000 ▪ www.augustmack.com
1302 North Meridian Street, Suite 300 ▪ Indianapolis, Indiana 46202

April 7, 2023

Mr. Robin Whitehurst
Bailey Edward
35 East Wacker Drive, Suite 2800
Chicago, Illinois 60601

Re: Final Report
Pre-Alteration Asbestos Survey
Fee Memorial Church
Hall, Kentucky
August Mack Project Number JW2279.930

Dear Mr. Whitehurst:

August Mack Environmental, Inc. (August Mack) has completed a pre-alteration asbestos survey of the Fee Memorial Church (building) in Hall, Kentucky. The survey aimed to determine if asbestos-containing materials (ACMs) were present on or within the building before its scheduled renovation. Mr. Dylan Petriko, State of Kentucky Licensed Asbestos Inspector (License #76382), performed the survey and sampling activities on February 3, 2023. A copy of the inspector's license is provided as an attachment. A summary of the survey and sampling methodologies and laboratory analytical results are presented in the following sections.

SURVEY, SAMPLE COLLECTION, & ANALYSIS

A walk-through and survey of the building were performed to identify suspect ACMs using the United States Environmental Protection Agency's (U.S. EPA's) list of items suspected to contain asbestos and the inspector's experience. Following, all readily accessible suspect ACMs were bulk sampled. Standard sampling protocols were employed, sampling tools were cleaned between samples, and chain-of-custody procedures were observed. Sample locations and the number of bulk samples for each homogenous area were determined and collected following U.S. EPA 40 CFR 763.86. A complete listing of all suspect ACMs sampled, including the sample numbers, material description, and location, has been provided as an attachment. A floor plan depicting the asbestos bulk sample locations has been provided in **Figure 1**.

Following the sample collection activities, all bulk sample layers were analyzed by EMSL Analytical, Inc., utilizing the polarized-light microscopy (PLM) method as specified in *40 CFR Part 763, Section 1, Appendix E, Subpart E*. A copy of all laboratory analytical results is provided as an attachment.

REGULATORY DISCUSSION & FINDINGS

The Kentucky Department of Environmental Management (KYDEP) and the U.S. EPA requires that before renovation, if regulated ACMs (RACMs) are present in quantities equal to or greater than 260 linear feet, 160 square feet, or 35 cubic feet of facility components, written notification is required before asbestos stripping or removal activities or any other activities that would break up, dislodge, or disturb the asbestos. The notice must include, among other things: RACMs which include friable ACMs; Category I ACMs that have become friable or that will be subjected to sanding, grinding, cutting, or abrading; and Category II ACMs that are either friable or have the potential of becoming friable by being crumbled, pulverized, or reduced to powder by the forces expected to act on the materials during renovation activities. More specifically, ACMs are designated as:

- **Regulated Asbestos-Containing Materials** (RACM) or friable asbestos – are materials that (a) are friable, (b) are Category I non-friable ACMs that have become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, (d) Category II non-friable ACM that has a high probability of becoming friable during demolition or renovation operation.
- **Category I non-friable** (Cat. I) - includes resilient floor coverings, asphalt roofing products, gaskets, and packings.
- **Category II non-friable** (Cat. II) - any non-friable ACM that is not a Category I (i.e., Transite siding, cove base, & drywall).

The Federal Occupational Safety & Health Administration (OSHA) and the U.S. EPA define an ACM as any material with an asbestos concentration of greater than one percent (>1%). **Based on the survey and laboratory analytical results, no ACMs were identified on or within the building.**

CONCLUSIONS

As presented above, August Mack has completed a pre-alteration asbestos survey of the Fee Memorial Church in Hall, Kentucky. The survey aimed to determine if ACMs are present in the areas expected to be impacted by the scheduled renovation. **As presented above, no ACMs were identified on or within the building.** A complete list of the suspect materials sampled as a part of the survey is provided as an attachment.

This survey was conducted to identify all ACMs present, to the extent practicable, for the Fee Memorial Church project. August Mack has taken precautions to inspect the site to identify all suspect ACMs in the area scheduled for renovation. However, it should be understood that some hidden ACMs may exist in areas that are impossible to inspect or were not encountered (e.g., interior wall cavities or mechanical chases) due to the nature of the survey. If identified, these materials should be sampled before being impacted by renovation activities.

We trust that this submittal is responsive to your needs and appreciate the opportunity to provide you with these environmental services. Please feel free to contact us if you have any questions.

Sincerely,

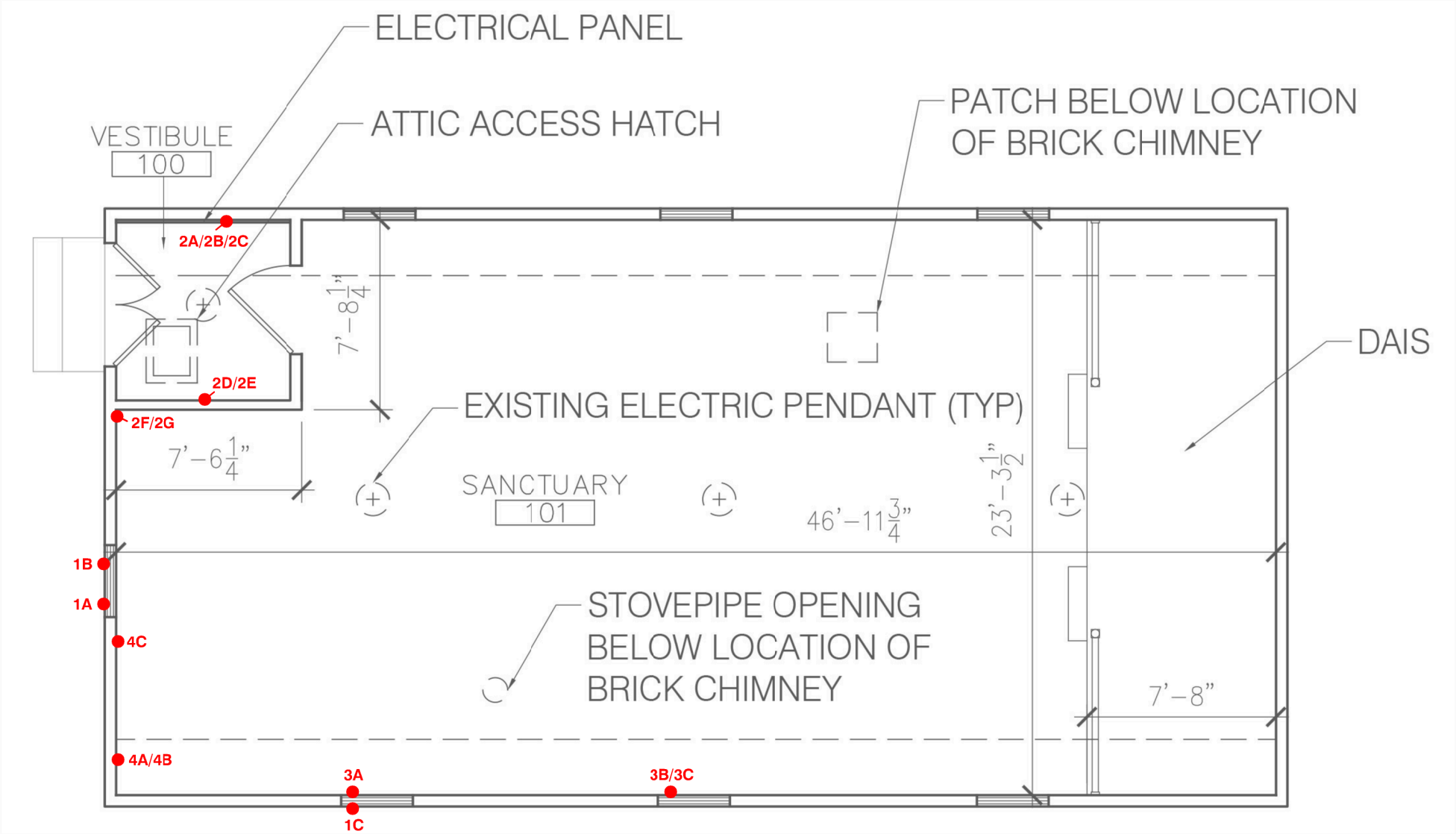
Matt Brandvik
Building Sciences Manager

Aaron Manka
Principal, Building Sciences

Attachments

FIGURES

Figure 1: Drawing Depicting Asbestos Bulk Sample Locations



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INDIANAPOLIS, INDIANA 46202
(317) 916-8000
(317) 916-8001 FAX
August Mack ENVIRONMENTAL

Pre-Renovation Asbestos Survey
Fee Memorial Church

Hall, Kentucky

Asbestos Sample Location Map

PROJECT No.:	FILENAME:		DATE:
JW2279.930	I:\2022\Projects\JW2279\Figures\Base.dwg		02/07/2023
DRAWN BY:	MODIFIED BY:	SCALE:	FIGURE:
Client Provided	BA	Not To Scale	1

LEGEND

● = **Asbestos Bulk Sample Location**

N

ATTACHMENT A

Inspector License and Accreditation

Commonwealth of Kentucky

Department for Environmental Protection
Division for Air Quality

Dylan Petriko

Has met the requirements of 401 KAR 58:005 and is accredited as an:

Asbestos Inspector

Agency Interest Id:	170234
License Number:	76382
Issue Date:	11/18/2022
Expiration Date:	08/12/2023

It is unlawful for any person to use this card other than the individual to whom it is issued or in any manner inconsistent with the law. Questions regarding your accreditation may be answered by visiting our website at: air.ky.gov or by calling (502) 564 3999.

Lost or damaged cards may be replaced for a $10 fee.

KY Occupational Safety and Health Program: labor.ky.gov

If found, please return to:
KY Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601

Your card must be present on any project where you are conducting asbestos related work.

ATTACHMENT B

Asbestos Bulk Sample Results

Asbestos Bulk Sample Results
Fee Memorial Church
316 Church Street, Nicholasville, Kentucky
February 3, 2023

HA	Sample ID	Asbestos %/Type		Material Description	Material Location
001	1A	ND		Window glazing	Exterior side of windows
	1B	ND			
	1C	ND			
002	2A-Joint Compound	ND		Drywall and plaster	Interior walls
	2A-Drywall	ND			
	2A-Plaster	ND			
	2B-Joint Compound	ND			
	2B-Drywall	ND			
	2B-Plaster	ND			
	2C-Joint Compound	ND			
	2C-Drywall	ND			
	2C-Plaster	ND			
	2D-Joint Compound	ND			
	2D-Drywall	ND			
	2D-Plaster	ND			
	2E-Joint Compound	ND			
	2E-Drywall	ND			
	2E-Plaster	ND			
	2F-Joint Compound	ND			
	2F-Drywall	ND			
	2F-Plaster	ND			
	2G-Joint Compound	ND			
	2G-Drywall	ND			
	2G-Plaster	ND			
003	3A	ND		White window caulking	Interior side of windows
	3B	ND			
	3C	ND			
004	4A-Ceiling Tile	ND		12"x12" Smooth ceiling tile and orange mastic	Ceiling
	4A-Mastic	ND			
	4B-Ceiling Tile	ND			
	4B-Mastic	ND			
	4C-Ceiling Tile	ND			
	4C-Mastic	ND			

HA = Homogenous Area
Asbestos-containing material (ACM) = greater than 1% (>1%) asbestos
ND = None Detected

ATTACHMENT C

Laboratory Analytical Results

EMSL Analytical, Inc.

6340 CastlePlace Dr. Indianapolis, IN 46250

Tel/Fax: (317) 803-2997 / (317) 803-3047

http://www.EMSL.com / indianapolislab@emsl.com

EMSL Order: 162302670
Customer ID: AUGM50
Customer PO:
Project ID:

Attention: Dylan Petriko
August Mack Environmental, Inc.
1302 North Meridian Street
Suite 300
Indianapolis, IN 46202

Phone: (317) 750-3293
Fax: (317) 916-8001
Received Date: 02/06/2023 8:58 AM
Analysis Date: 02/10/2023
Collected Date: 02/06/2023

Project: JW2279.930 Bailey-Edwards Nicholasville Church ACM

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
1A *162302670-0001*	Exterior side of windows - HA-001 - Window glazing /	White Non-Fibrous Homogeneous	HA: 001	100% Non-fibrous (Other)	None Detected
1B *162302670-0002*	Exterior side of windows - HA-001 - Window glazing /	White Non-Fibrous Homogeneous	HA: 001	100% Non-fibrous (Other)	None Detected
1C *162302670-0003*	Exterior side of windows - HA-001 - Window glazing /	White Non-Fibrous Homogeneous	HA: 001	100% Non-fibrous (Other)	None Detected
2A-Joint Compound *162302670-0004*	Interior walls - HA-002 - Plaster (skim and base coat) /	White Non-Fibrous Homogeneous	HA: 002	100% Non-fibrous (Other)	None Detected
2A-Drywall *162302670-0004A*	Interior walls - HA-002 - Plaster (skim and base coat) /	Brown/White Fibrous Heterogeneous	30% Cellulose HA: 002	60% Gypsum 10% Non-fibrous (Other)	None Detected
2A-Plaster *162302670-0004B*	Interior walls - HA-002 - Plaster (skim and base coat) /	Gray Non-Fibrous Homogeneous	HA: 002	100% Non-fibrous (Other)	None Detected
2B-Joint Compound *162302670-0005*	Interior walls - HA-002 - Plaster (skim and base coat) /	White Non-Fibrous Homogeneous	HA: 002	100% Non-fibrous (Other)	None Detected
2B-Drywall *162302670-0005A*	Interior walls - HA-002 - Plaster (skim and base coat) /	Brown/White Fibrous Heterogeneous	30% Cellulose HA: 002	60% Gypsum 10% Non-fibrous (Other)	None Detected
2B-Plaster *162302670-0005B*	Interior walls - HA-002 - Plaster (skim and base coat) /	Gray Non-Fibrous Homogeneous	9% Cellulose HA: 002	91% Non-fibrous (Other)	None Detected
2C-Joint Compound *162302670-0006*	Interior walls - HA-002 - Plaster (skim and base coat) /	White Non-Fibrous Homogeneous	HA: 002	100% Non-fibrous (Other)	None Detected
2C-Drywall *162302670-0006A*	Interior walls - HA-002 - Plaster (skim and base coat) /	Brown/White Fibrous Heterogeneous	30% Cellulose HA: 002	60% Gypsum 10% Non-fibrous (Other)	None Detected
2C-Plaster *162302670-0006B*	Interior walls - HA-002 - Plaster (skim and base coat) /	Gray Non-Fibrous Homogeneous	9% Cellulose HA: 002	91% Non-fibrous (Other)	None Detected

Initial report from: 02/10/2023 13:22:23

EMSL Analytical, Inc.
6340 CastlePlace Dr. Indianapolis, IN 46250
Tel/Fax: (317) 803-2997 / (317) 803-3047
http://www.EMSL.com / indianapolislab@emsl.com

EMSL Order: 162302670
Customer ID: AUGM50
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
2D-Joint Compound *162302670-0007*	Interior walls - HA-002 - Plaster (skim and base coat) /	White Non-Fibrous Homogeneous	HA: 002	100% Non-fibrous (Other)	None Detected
2D-Drywall *162302670-0007A*	Interior walls - HA-002 - Plaster (skim and base coat) /	White Non-Fibrous Homogeneous	30% Cellulose HA: 002	60% Gypsum 10% Non-fibrous (Other)	None Detected
2D-Plaster *162302670-0007B*	Interior walls - HA-002 - Plaster (skim and base coat) /	Gray Non-Fibrous Homogeneous	HA: 002	100% Non-fibrous (Other)	None Detected
2E-Joint Compound *162302670-0008*	Interior walls - HA-002 - Plaster (skim and base coat) /	White Non-Fibrous Homogeneous	HA: 002	100% Non-fibrous (Other)	None Detected
2E-Drywall *162302670-0008A*	Interior walls - HA-002 - Plaster (skim and base coat) /	Brown/White Fibrous Heterogeneous	30% Cellulose HA: 002	60% Gypsum 10% Non-fibrous (Other)	None Detected
2E-Plaster *162302670-0008B*	Interior walls - HA-002 - Plaster (skim and base coat) /	Gray Non-Fibrous Homogeneous	9% Cellulose HA: 002	91% Non-fibrous (Other)	None Detected
2F-Joint Compound *162302670-0009*	Interior walls - HA-002 - Plaster (skim and base coat) /	White Non-Fibrous Homogeneous	HA: 002	100% Non-fibrous (Other)	None Detected
2F-Drywall *162302670-0009A*	Interior walls - HA-002 - Plaster (skim and base coat) /	Brown/White Fibrous Heterogeneous	40% Cellulose HA: 002	50% Gypsum 10% Non-fibrous (Other)	None Detected
2F-Plaster *162302670-0009B*	Interior walls - HA-002 - Plaster (skim and base coat) /	Gray/White Non-Fibrous Homogeneous	<1% Cellulose HA: 002	10% Perlite 90% Non-fibrous (Other)	None Detected
2G-Joint Compound *162302670-0010*	Interior walls - HA-002 - Plaster (skim and base coat) /	White Non-Fibrous Homogeneous	HA: 002	100% Non-fibrous (Other)	None Detected
2G-Drywall *162302670-0010A*	Interior walls - HA-002 - Plaster (skim and base coat) /	Brown/White Non-Fibrous Homogeneous	30% Cellulose HA: 002	60% Gypsum 10% Non-fibrous (Other)	None Detected
2G-Plaster *162302670-0010B*	Interior walls - HA-002 - Plaster (skim and base coat) /	Gray/White Non-Fibrous Homogeneous	HA: 002	10% Perlite 90% Non-fibrous (Other)	None Detected
3A *162302670-0011*	Interior side of windows - HA-003 - White window caulking /	White Non-Fibrous Homogeneous	HA: 003	100% Non-fibrous (Other)	None Detected
3B *162302670-0012*	Interior side of windows - HA-003 - White window caulking /	White Non-Fibrous Homogeneous	HA: 003	100% Non-fibrous (Other)	None Detected

Initial report from: 02/10/2023 13:22:23

EMSL Analytical, Inc.
6340 CastlePlace Dr. Indianapolis, IN 46250
Tel/Fax: (317) 803-2997 / (317) 803-3047
http://www.EMSL.com / indianapolislab@emsl.com

EMSL Order: 162302670
Customer ID: AUGM50
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
3C *162302670-0013*	Interior side of windows - HA-003 - White window caulking /	White Non-Fibrous Homogeneous	HA: 003	100% Non-fibrous (Other)	None Detected
4A-Ceiling Tile *162302670-0014*	Ceiling - HA-004 - 12"x12" Smooth ceiling tile and orange mastic /	White Non-Fibrous Homogeneous	HA: 004	100% Non-fibrous (Other)	None Detected
4A-Mastic *162302670-0014A*	Ceiling - HA-004 - 12"x12" Smooth ceiling tile and orange mastic /	Tan Non-Fibrous Homogeneous	HA: 004	100% Non-fibrous (Other)	None Detected
4B-Ceiling Tile *162302670-0015*	Ceiling - HA-004 - 12"x12" Smooth ceiling tile and orange mastic /	White Non-Fibrous Homogeneous	HA: 004	100% Non-fibrous (Other)	None Detected
4B-Mastic *162302670-0015A*	Ceiling - HA-004 - 12"x12" Smooth ceiling tile and orange mastic /	Tan Non-Fibrous Homogeneous	HA: 004	100% Non-fibrous (Other)	None Detected
4C-Ceiling Tile *162302670-0016*	Ceiling - HA-004 - 12"x12" Smooth ceiling tile and orange mastic /	White Non-Fibrous Homogeneous	HA: 004	100% Non-fibrous (Other)	None Detected
4C-Mastic *162302670-0016A*	Ceiling - HA-004 - 12"x12" Smooth ceiling tile and orange mastic /	Tan Non-Fibrous Homogeneous	HA: 004	100% Non-fibrous (Other)	None Detected

Analyst(s)
Hilary Jarvis (23)
Ross Matlock (10)

Melissa Newkirk
Asbestos Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 “Interim Method”) but augmented with procedures outlined in the 1993 (”final”) version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Indianapolis, IN NVLAP Lab Code 200188-0, AZ0939, CA 2575, CO AL-15132, TX 300262, A2LA Accredited - Certificate #2845.25

Initial report from: 02/10/2023 13:22:23

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LABORATORY • PRODUCTS • TRAINING

9EG2-RR7H-ARHT

Client Information
August Mack Environmental, Inc.
Indianapolis, IN

Project Overview

PO Number	
Project Name	JW2279.930 Bailey-Edwards Nicholasville Church ACM
Project ID	
Client	
Special Instructions	
Bill To	AUGM50
Report to Contact	Aaron manka Matt Brandvik Rhiannon benge
Report to Email	

Project Site

Building Type	Commercial
Address 1	316 Church Street
Address 2	
City	Nicholasville
State	KY
Country	US

Testing Laboratory
EMSL Analytical
6340 CastlePlace Dr.
Indianapolis, IN

HA	Sample ID	Material	Location	Date/Time Collected	Matrix / Test Method	TAT	Notes
001	1A	HA-001 - Window glazing	Exterior side of windows	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
001	1B	HA-001 - Window glazing	Exterior side of windows	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
001	1C	HA-001 - Window glazing	Exterior side of windows	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
002	2A	HA-002 - Plaster (skim and base coat)	Interior walls	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
002	2B	HA-002 - Plaster (skim and base coat)	Interior walls	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
002	2C	HA-002 - Plaster (skim and base coat)	Interior walls	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
002	2D	HA-002 - Plaster (skim and base coat)	Interior walls	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
002	2E	HA-002 - Plaster (skim and base coat)	Interior walls	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
002	2F	HA-002 - Plaster (skim and base coat)	Interior walls	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
002	2G	HA-002 - Plaster (skim and base coat)	Interior walls	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
003	3A	HA-003 - White window caulking	Interior side of windows	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
003	3B	HA-003 - White window caulking	Interior side of windows	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
003	3C	HA-003 - White window caulking	Interior side of windows	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
004	4A	HA-004 - 12"x12" Smooth ceiling tile and orange mastic	Ceiling	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
004	4B	HA-004 - 12"x12" Smooth ceiling tile and orange mastic	Ceiling	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	
004	4C	HA-004 - 12"x12" Smooth ceiling tile and orange mastic	Ceiling	Feb 06, 2023 8:15 AM	Asbestos Bulk / PLM EPA 600	1 Week	

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9EG2-RR7H-ARHT

Sampled By / Date Feb 06, 2023

Relinquished By / Date Feb 06, 2023

Received (Lab) / Date 2/6/23 858am WI