

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01000

GENERAL REQUIREMENTS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS: All of the Contract Documents, including General and Supplementary Conditions, apply to the work of this section. This section applies to all work performed under the Contract and is inherently made a part of each specification section.

1.02 DEFINITIONS:

- A. Provide: means furnish and install, complete with all necessary components and accessories, ready for intended use.
- B. Indicated: is a reference to other portions of the Contract Documents.
- C. Approved: Except where specifically stated otherwise, the words “approved”, “directed”, “requested”, “selected”, “accepted” mean “approved by the Preservation Consultant”, “directed by the Preservation Consultant” and so on. The words “approved” and “accepted” shall be held to the limitations stated in the General and Supplementary Conditions. In no case shall “approval” or “acceptance” by the Preservation Consultant be interpreted as a release of Contractor of his responsibilities to fulfill all of the requirements of the Contract Documents.
- D. Observe, Observation: Except as otherwise defined in greater detail, the Preservation Consultant’s observation of the work will be held to the limitations stated in the General and Supplementary Conditions and the Owner/Preservation Consultant agreement. In no case shall observation by the Preservation Consultant be interpreted as a release of Contractor of his responsibilities to fulfill all of the requirements of the Contract Documents. Observe shall be defined in accordance with the General Conditions of the Contract to include only visiting the site periodically, observing the condition and progress of the work, and reporting to the Owner.
- E. Furnish: Except as otherwise defined in greater detail, furnish means supply, including shop fabrication if applicable, and deliver to project site, ready for unloading, unpacking, assembly, installation and the like as applicable in each instance.
- F. Install: Except as otherwise defined in greater detail, install means operations at project site including, but not limited to, unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, placing in service and similar operations as applicable in each instance.

SECTION 01025 – UNIT PRICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this section.
- B. Carefully examine all of the Contract Documents for requirements which effect Unit Prices. All Unit Prices shall be strictly based on applicable Contract Documents.
- C. Proposal Form: Completely fill-in all blanks in this Section and attach this section to the Bidder's Form for General Bid.

1.02 UNIT PRICES

- A. Unit Prices: Unit Prices as defined in this section will be used to determine adjustments to the Contract Amount when changes related to these Unit Prices are made in the work.
- B. Measurement and Payment: Prior to beginning any work on a Unit Price basis, the Contractor shall notify the Owner sufficiently in advance to permit measurements to be verified. Only quantities which have been verified and approved by the Owner will be used to determine adjustments to the Contract Amount. Performance of any work not required by the Contract Documents, verified by the Owner, or authorized by signed Change Order shall not be considered for payment under the terms of Unit Prices. The Contractor shall be solely responsible for all unauthorized work.

1.03 SCHEDULE OF UNIT PRICES

ITEM	UNIT	ADD	DEDUCT
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1. **UNIT PRICE #1:** Additions and subtractions to base bid amount of spalled brick replacement per brick (Base bid is 15 individual bricks).

Price brick: _____

2. **UNIT PRICE #2:** Additions and subtractions to base bid amount of wood roof sheathing replacement per square foot (Base bid is 100 square feet).

Price Square Foot: _____

PART 2 - PRODUCTS [NOT USED]

PART 3 - EXECUTION [NOT USED]

END OF SECTION

SECTION 01030 – ALTERNATES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this section.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements which effect the work of this section.

1.03 ALTERNATES

- A. Definition: Alternates are alternative products, materials, equipment, installations or systems, which may, at the Owner's option be selected and recorded in the Contract (Owner/ Contractor Agreement) to either supplement or displace corresponding basic requirements of contract documents. Alternates may or may not substantially change scope and general character of the work.
- B. Alternate Requirements: A Schedule of Alternates is included with this section. Each alternate is defined by abbreviated language, recognizing that Contract Documents define the requirements. Coordination of related work is required to ensure that work affected by each selected alternate is complete and properly interfaced with work of accepted alternates.
- C. Alternate Proposals: The Contractor shall provide written proposals for each alternate on the Proposal Form for the Owner's consideration. Each proposal amount shall include the entire cost of the alternate portion of work including all overhead, profit, and all other costs including costs to coordinate and interface the alternate with related and adjacent work.
- D. Selection of Alternates: The Owner shall be the sole judge of which alternates are selected for inclusion in the Contract. The selected alternates may be used to determine the low bidder for the overall contract or a portion of the overall contract.
- E. Notification: Immediately following award of Contract, prepare and distribute to each entity to be involved in performance of the work, a notification of status of each alternate. Indicate which alternates have been: 1) Accepted; 2) Rejected; and 3) Deferred for consideration at a later date as indicated. Include full description of negotiated modifications to alternates, if any.

1.04 SCHEDULE OF ALTERNATES

- A. **ALTERNATE #1:** Rebuild chimney from the roofline up to exactly match its existing configuration in layout, coursing, and brick types using mortar consisting of Hydraulic Lime NHL 5 by Virginia Limeworks and masonry sand. Salvage and reuse as many sound brick as feasible from the existing chimney, and provide matching sound water-struck salvage brick from other sources as required to fully rebuild the chimney.

PART 2 - PRODUCTS [Not Used]

PART 3 - EXECUTION [Not Used]

END OF SECTION

SECTION 04520

CHIMNEY REPOINTING AND REBUILDING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to the work of this section.
- B. The extent of work is shown on the drawings.

1.02 DESCRIPTION OF THE WORK

- A. Provide all plant, materials, labor and equipment necessary and/or required for the complete execution of the work of this Section including, but not limited to:
 - 1. Repair chimney
 - a. Cut and repoint 100% of joints on all sides of chimney down to the roofline, including joints covered by roof flashings.
 - b. Replace individual deeply spalled brick in random locations (assume 15 individual bricks in addition to any brick that are replaced within the top six courses).
 - c. Rebuild top 6 courses, including replacement of any deeply spalled brick.
 - c. Install ventilating bluestone cap
 - d. Clean out existing flashing reglets 1” deep for installation of new counter flashings.
 - 2. Providing staging and hoisting as required to carry out the chimney repairs
 - 3. **ALTERNATE #1:** Rebuild chimney from the roofline up to exactly match its existing configuration in layout, coursing, and brick types using mortar consisting of Hydraulic Lime NHL 5 by Virginia Limeworks and masonry sand. Salvage and reuse as many sound brick as feasible from the existing chimney, and provide matching sound waterstruck salvage brick from other sources as required to fully rebuild the chimney.
 - 4. **UNIT PRICE #1:** Additions and subtractions to base bid amount of spalled brick replacement per brick (Base bid is 15 individual bricks).

1.03. RELATED WORK SPECIFIED ELSEWHERE

Section 07300 - Wood Shingle Roofing

Section 07600 - Flashing and Sheet Metal

1.04 INTENT

A. It is the intent of this work to make the chimneys sound and watertight.

1.05 QUALITY ASSURANCE

- A. The work of this Section shall be accomplished by a specialist firm of established reputation for performance of work of the highest quality having not less than five years of successful experience in masonry restoration including the use of lime based mortars on buildings of similar age and type to the Witch House, or, if new organized, whose personnel have previously established a similar reputation in the same field, and which is regularly engaged in and maintains a regular force of workman skilled in the work of this section.
- B. Provide sufficient workmen and supervisors who shall be present at all times during execution of this portion of the Work, and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.
- C. The Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

1.06 SUBMITTALS

A. Work Plan

- 1. Submit work plan detailing schedule proposed to accomplish the work, protection of entry ways and paths used by the owners, the owner's employees, and the general public using the facility and grounds, and protection of adjacent roof surfaces. Indicate how this work will be coordinated with the adjacent roofing work.

B. Samples.

- 1. Submit samples of each type of brick (submit 6 brick demonstrating the full range of color and finish proposed for use), lime, cement, aggregate, colorant, and ties proposed for use. Resubmit brick samples until the preservation Consultant determines that the proposed brick are an adequate match to the existing historic brick.
- 2. Product Data: Submit manufacturers' technical data and Materials safety Data Sheets for each product specified or proposed for use including recommendations for their

application and use.

- C. Field Constructed Mock-ups. Prior to the start of production conservation work for the respective items, provide full size mock-ups for each of the items listed in locations designated by the Preservation Consultant. Mock-ups will be used to measure standards of workmanship, finish, texture, material, and detail, and qualifications of workman with regard to requirements set forth in the Contract Documents. Obtain written acceptance of Mock-up from Preservation Consultant before proceeding with production work. Repeat mock-up procedure as required until accepted by Preservation Consultant. Protect and mark accepted mock-ups, retain in undisturbed condition during construction to be used as a standard for acceptance of completed work. Unless otherwise indicated accepted mock-ups may be incorporated into production work.
1. 1' by 2' section demonstrating cutting of joints and installation of mortar, particularly with respect to tooling and color.
 2. Installation of replacement brick for an individual spalled brick, demonstrating match of replacement to existing remaining brick, and finished mortar joints.
 3. Alternate #1: 2' x 3' section of complete rebuilding demonstrating the range of brick to be used in the rebuilding, coursing, and tooling and color of mortar joints.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers. Store materials only in designated areas.
- B. Protect materials during storage and construction. Keep containers tightly closed and away from open flames. Protect liquid components from freezing. Keep all products dry and protected from rain. Comply with manufacturer's recommendations for minimum and maximum temperatures.

1.08 PROJECT CONDITIONS

- A. Environmental requirements.
1. Do not install mortar between October 31 and April 15 to avoid risk of freezing uncured mortar.
- B. Protect roof areas from damage by masonry materials.
- C. Protect the Owner, the Owner's employees, and the general public using the facility and site from possible injury by construction debris.

1.09 GUARANTEE

- A. Provide written warranty ensuring that all masonry materials and installation shall remain sound, fully watertight, and free of cracks and defects, for a period of 2 (two) years from the date of substantial completion, and that any such defects occurring within the warranty period will be repaired or replaced in a manner conforming with the requirements of these Contract Documents.

PART 2: PRODUCTS

2.01 MORTAR MATERIALS

- A. Lime: Hydrated Type S Lime for masonry purposes, ASTM c 207. Air entrained lime shall not be used.
- B. Hydraulic Lime: NHL 5 Naturally Hydraulic Lime by Virginia Limeworks.
- B. Cement: Portland Cement, Type I ASTM C 150. Cement shall comply with ASTM C 91, not more than 0.30% water soluble alkali.
- C. Mortar Aggregate: Well-graded sharp bagged mason's mortar sand, ASTM C 144.
- D. Water: Clean, potable water free from deleterious materials.

2.02 BRICK AND STONE

- A. Brick:
 - 1. Base Bid work: Sound salvage face brick to match the size, color range, and texture of the sound existing 18th century water struck brick in the chimney, ASTM C-216-86, Grade SW. Reuse existing sound brick from section of the chimney being rebuilt to the maximum extent feasible.
 - 2. Alternate #1 - Complete Rebuilding: new water struck brick or sound salvage face brick to match the size, color range, and texture of the sound existing 18th century water struck brick in the chimney, ASTM C-216-86, Grade SW. Reuse existing sound brick from section of the chimney being rebuilt to the maximum extent feasible.
- B. Bluestone: 2" thick bluestone slabs sized to minimize the number of pieces and joints required to fabricate the cap, with joints between stones to be over flue partitions.

PART 3 – EXECUTION

3.01 INSPECTION AND ACCEPTANCE

- A. Examine all surfaces and contiguous elements to receive the work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptance of surfaces and contiguous elements.

3.02 REFERENCE STANDARDS

- A. For use and installation of Hydraulic Lime, follow manufacturer's instructions, guidelines and written specifications.

3.03 INSTALLATION

- A. Joint preparation. All mortar joints to be repointed are to be cut back to a uniform depth of 1", or to sound mortar, whichever is greater, using hand tools only. Care must be taken to avoid damage to the masonry units and to prevent widening of joints. Use of power tools will only be permitted by written consent of the Preservation Consultation after satisfactory demonstration that all tradesmen doing the work can cut the mortar without damaging the brick in any way. Back of joints shall be cut square. All loose material shall be washed from the joints using a hose. Joints shall be wetted before new mortar is applied.
- B. Demolition of top courses of chimney: Carefully take apart starting at the top, and continuing to the sixth course or to sound fully sound masonry if that is reached before the sixth course. Clean all mortar and soil from all sound brick removed to salvage as many brick as feasible for reinstallation.
- C. Mortar mixing: Lime, cement, and sand shall be carefully measured and mixed together well dry. The minimum amount of water to produce a workable mix shall be used. Mix mortar in small batches so that it will be used within one hour after preparation.
- D. Mortar proportions for repointing and rebuilding:
 - 1 Part Portland cement by volume
 - 2 Parts lime by volume
 - 8 Parts sand by volume
- E. Rebuilding of top six courses: Relay courses using original brick as much as possible, and replicating the bonding and coursing pattern and joint size of the original design. Use matching salvage brick to replace any units that were not salvageable during the removal. Lay brick in full beds of mortar. Fill all bed, head, and collar joints. Pre-wet brick before laying to insure that units are saturated, but without standing water on the surface. At top course omit one brick at each flue on the east and west sides of the chimney to

facilitate ventilation under the bluestone cap.

- F. Joint filling: Mortar shall be packed in thin layers, not exceeding 1/2" Dampen joints between lifts and after tooling. Prevent rapid drying out of new mortar by misting and covering with wet tarps as necessary. Take extra precautions to prevent drying for at least three days after installation if work is done during hot or sunny weather. Tool joints with profile as directed by Preservation Consultant. No mortar is to extend onto the face of the units. In general the new joints are to be raked slightly back from the face of the brick, but not as deeply raked as existing masonry joints.
- G. Replacing spalled brick: Mark all brick posed for replacement and review with Preservation before starting removals. Carefully cut out deeply spalled brick with care to avoid damaging adjacent sound brick. Install salvage brick that matches appearance and height of adjacent sound brick.
- H. Clean-up: Excess mortar should be removed from the surface before it sets using a bristle brush or by rubbing the surface with burlap or clean sand. Reclean wall surfaces after repointing, using city pressure water and brush methods recommended by Brick Institute of America. If not adequate, re-clean surfaces using ProSoCo SureKlean 600 detergent only if approved by Preservation Consultant. Concentration of cleaner shall be based on Architect's approval of sample application. Remove and replace work that cannot be successfully cleaned.
- I. Reglets for chimney flashing: Cut reglets 1" deep in locations requested by installer of copper flashings.
- J. Chimney Cap Installation: Install bluestone cap on top course of the rebuilt upper chimney brickwork on a top course of brick omitting individual brick as required to provide ventilation while providing full support for the stone cap. Provide stainless steel or fiberglass cloth insect screen at inside of all ventilation openings positioned so it will not be readily visible from the ground. Review details of cap including layout of bluestone pieces and proposed installation procedures including joint filling with Preservation Consultant prior to installation.

3.04 Alternate #1 – Rebuilding chimney from roofline up.

- A. Documentation: Measure existing chimney and coursing both in height and width including details of pilasters and prepare story pole of existing coursing before dismantling chimney.
- B. Dismantling of existing chimneys: Carefully take apart brick masonry starting at the top, and continuing to the lowest part of the roofline in order to salvage as many sound brick for reuse. Carefully clean all mortar and soil from all sound brick removed to salvage as many brick as feasible for reinstallation.

- C. Mortar mixing: Lime and sand shall be carefully measured and mixed together well dry. The minimum amount of water to produce a workable mix shall be used. Mix mortar in small batches so that it will be used within one hour after preparation.
- D. Mortar proportions for rebuilding:
- 1 Part Hydraulic Lime NHL 5 by Virginia Limeworks by volume
 - 2 1/4 Parts damp sand by volume
- E. Rebuilding: Relay top courses using original brick as much as possible, and replicating the bonding and coursing pattern of the original design. Do not mix brick of substantially different heights in the same course, and maintain a maximum joint thickness of 1/2" in both head and bed joints. As existing many existing joints are thicker than 1/2", additional courses are to be installed as required to maintain the existing height of the chimney. Make sure all pilasters and flue partitions are fully toothed into adjoining masonry. Use matching salvage brick to replace any units that were damaged during the removal. Lay brick in full beds of mortar. Fill all bed, head, and collar joints. Pre-wet brick before laying to insure that units are saturated, but without standing water on the surface.
- F. Use of New Brick: The use of new waterstruck brick will be considered by the Preservation Consultant following submission and review of sample panels of the proposed new brick and initial dismantling of the existing chimney to determine the extent that existing historic bricks can be salvaged.
- G. For joint filling, tooling, clean up, and installation of bluestone cap follow the provisions of Paragraphs 3.03 F-J above.

END OF SECTION

SECTION 06250

CARPENTRY, FRAMING, AND WOOD CONSERVATION

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to the work of this section.
- B. The extent of work is shown on the drawings, and as scheduled herein.

1.02 DESCRIPTION OF THE WORK

- A. Provide all materials, labor and equipment necessary and/or required for the complete execution of the work of this Section and as indicated on the Drawings, including, but not limited to:
 - 1. Gutters: Provide new wood “V” shaped gutters complete with indicated hanging systems on rear facade leader (refer to Drawings 1/A6 & 3/A6).
 - 2. Downspouts: Provide new wood square sectioned downspouts on rear facade complete with brass or bronze hanging straps (refer to drawing 1/A6 & 2/A6).
 - 3. Rake Boards: Provide new rake boards to match existing on front facade gables (refer to drawing 1/A5).
 - 4. Rear Eaves: Provide new wood slanted soffit board and related blocking in conjunction with installing gutter hangers.
 - 5. Clapboards: Provide new western red cedar clapboards to replace any clapboards that cannot be retained and reused in conjunction with installing flashings at the junction of the front entry porch roof to the front facade clapboards.
 - 6. Roof Sheathing:
 - a. Inspect and replace defective roof sheathing to match existing as required; assume replacement of 100 square feet in base bid.
 - b. **UNIT PRICE #2:** Additions and subtractions to base bid amount of wood roof sheathing replacement per square foot (Base bid is 100 square feet).
 - 6. Paint: Backprime, prime and finish paint new wood trim and finish elements includ-

SECTION 07300

WOOD SHINGLE ROOFING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to the work of this section.
- B. The extent of work is shown on the drawings.

1.02 DESCRIPTION OF THE WORK

- A. Provide all plant, materials, labor and equipment necessary and/or required for the complete execution of the work of this Section including, but not limited to:
 - 1. Remove all existing roofing materials on all roof pitches down to original sheathing, including but not limited to wood shakes, underlayments, and metal flashings, and legally dispose of same.
 - 2. Provide new red cedar wood shingle roof including a “Cedar Breather” mesh ventilation system and related underlayments.
 - 3. Perform carpentry repairs as required to roof sheathing and coordinate with repair/replacement of trim at eaves and rakes.

1.03. RELATED WORK SPECIFIED ELSEWHERE

Section 07600 - Sheet Metal and Flashings

Section 06250 - Carpentry

1.04 INTENT

- A. It is the intent of this work to make the roof, gutter, and downspouts sound and fully watertight, and to restore the roof to its historical appearance.

1.05 QUALITY ASSURANCE

- A. The work of this Section shall be accomplished by a specialist firm of established reputa-

tion for performance of work of the highest quality having not less than five years of successful experience in the installation of wood shingle roofs and related carpentry work on buildings of similar age and type to the Witch House including at least 2 museum houses, or, if newly organized, whose personnel have previously established a similar reputation in the same field, and which is regularly engaged in and maintains a regular force of workman skilled in the work of this section.

- B. Provide sufficient workmen and supervisors who shall be present at all times during execution of this portion of the work, and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.
- C. The Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

1.06 SUBMITTALS

A. Work Plan

- 1. Submit work plan detailing schedule proposed to accomplish the work including the order in which specific pitches will be worked on, coordination with chimney repairs, protection of entry ways and paths used by the owner and their employees and the general public using the building and premises, shoring to protect the attic roof framing from excess loading during the course of the work, and provisions to prevent any leaks and control interior dust during work in progress and general protection of work surfaces from inclement weather.

B. Shop Drawings.

- 1. Drawings at 3" to 1' illustrating any proposed changes from the details of the work as presented in the construction documents.

C. Samples.

- 1. Provide 6 samples of wood shingles proposed for use.
- 2. Provide full length samples of wood stock proposed for roof preparation, sheathing replacement, and related trim.
- 3. Provide samples of each type of wood, hardware, fasteners, paints, underlayments, adhesives, and other materials proposed for use. Provide unopened container of each material with manufacturer's original labeling.
- 4. Product Data. Submit manufacturers' technical data and Materials safety Data Sheets for each product specified or proposed for use including recommendations for their

application and use.

D. Field Constructed Mock-ups. Prior to the start of production work for the respective items, provide full size mock-ups for each of the items listed in locations designated by the Preservation Consultant. Mock-ups will be used to measure standards of workmanship, finish, texture, material, and detail, and qualifications of workman with regard to requirements set forth in the Contract Documents. Obtain written acceptance of mock-up from Preservation Consultant before proceeding with production work. Repeat mock-up procedure as required until accepted by Preservation Consultant. Protect and mark accepted mock-ups, retain in undisturbed condition during construction to be used as a standard for acceptance of completed work. Unless otherwise indicated accepted mock-ups may be incorporated into production work.

1. 6' x 6' sections of shingle installation where the eaves meet a gable rake demonstrating in three distinct stages:
 - a. Removal of existing roofing and preparation of existing roof sheathing.
 - b. Installation of underlayments, cedar breather mesh, and shims as required to make smooth transition from roof to eaves and rake trim.
 - c. Installation of wood shingles.
2. 2' wide x 3' high section of shingle and EPDM flashing installation where the front gable valley meets the front entry porch gable valley demonstrating in three distinct stages:
 - a. Removal of existing roofing and preparation of existing roof sheathing.
 - b. Installation of underlayments, EPDM membrane, and copper edge strips as required to make a watertight path for roof drainage.
 - c. Installation of wood shingles of shingles over upper edge of EPDM membrane.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers. Store materials only in designated areas.
- B. Protect materials during storage and construction. Keep containers tightly closed and away from open flames. Protect liquid components from freezing. Keep all products dry and protected from rain. Comply with manufacturer's recommendations for minimum and maximum temperatures.

1.08 PROJECT CONDITIONS

- A. Environmental requirements. Do not apply shingles or other roofing materials over damp substrates.
- B. Do not apply paint in damp weather or to damp substrates.
- C. Carry out work in limited stages working on one primary pitch at a time in order to minimize the chance of leaks due to bad weather during the construction process. Insure that each pitch is fully watertight before going on to next pitch. Take special care over primary museum section.
- D. Protect roof areas as they are exposed by removal of roof finishes and repairs to the substrate from weather and physical damage to the surfaces below. Fully protect by securely attached waterproof tarpaulins, plastic sheeting, or roofing felts all areas where roofing materials have been removed to effect work.
- E. Protect employees, users of the building, and the general public from possible injury by construction debris and construction activities.
- F. Provide shoring to roof framing and sheathing in attic to support any excessive loading stemming from the execution of the work during all phases of the work.

1.09 GUARANTEE

- A. Provide written warranty ensuring that all roofing materials shall remain sound, fully watertight, and free of cracks and defects, for a period of two (2) years from the date of substantial completion, and that any such defects occurring within the warranty period will be repaired or replaced in a manner conforming with the requirements of these Contract Documents.

PART 2 – PRODUCTS

2.01 WOOD SHINGLES

- A. #1 Grade Blue Label 18” Perfection Western Red Cedar shingles for all exposed applications and starter courses.
- B. For under coursing and shimming: Under coursing Grade or better.

2.02 UNDERLAYMENTS

- A. Waterproof membrane strip at all eaves, rakes, and flashing at chimney and sidewall at ell; Ice and Water Shield by W.R. Grace and Co., or equal.

B. 30lb. asphalt saturated roofing felts.

C. Ventilation mesh: Cedar Breather by Benjamin Obdyke Inc. 400 Babylon Rd, Suite A Horsham, PA 19044 (800-523-5261), or equal.

2.03 WOOD

A. Dimensional lumber

1. Ridge boards: Clear Western Red Cedar, Grade C–Select or Better.
2. Trim to be painted: One of the following as directed by the Preservation Consultant: clear Spanish Cedar, or clear Honduras mahogany, Grade C–Select or Better, all heartwood.
3. Dress dimensional lumber S4S unless otherwise indicated.
4. Moisture content: For all dressed dimensional lumber – 15% maximum at installation and at time of dressing and complying with the dry size requirements of PS20. Mark lumber “ML–15”. Air dried lumber may be used provided it meets these requirements.

B. Miscellaneous lumber: Provide wood for support and attachment of other work such as cant strips, sheathing, nailers, blocking, grounds, and similar items.

1. Sheathing: rough sawn No. 3 or better eastern white pine, dressed as required to match thickness of existing adjacent stock. Spruce ledger board is not acceptable.
2. 1/2 inch exterior plywood, pine sheathing, and /or shingles as required to shim extreme areas of roof sag.
3. All other lumber: construction grade eastern white pine, spruce, southern yellow pine, or Douglas fir.
4. Moisture content: 15% maximum at time of dressing and at installation.

C. Anchorage and Fastening Materials:

1. Select proper type, size, and materials for each application, except where specific items are indicated in these Contract Documents. All materials to be hot-dip galvanized except copper and brass fasteners.
2. Shingle nails; 4 D and 5 D hot-dip galvanized shingle nails (not boxnails), size as

required to fully penetrate sheathing without protruding on attic side.

The use of Nail Guns for shingle installation is prohibited.

4. Use corrosion resistant finish nails on exposed trim elements. The use of nail guns is prohibited except for specific applications where usage is approved in writing by the Preservation Consultant. Do not use dry wall or Phillips head screws where heads will be exposed to view.
5. Comply with the following.
 - a. Nails and Staples: FS FF-N-105
 - b. Wood Screws: FS FF-S-111
 - c. Bolts and Studs: FS FF-B-575
 - d. Nuts: FS FF-W-92
 - e. Washers: FS FF-W-92
 - f. Lag Screws or Lag Bolts: FS FF-B-561

PART 3 – EXECUTION

3.01 INSPECTION AND ACCEPTANCE

- A. Examine all surfaces and contiguous elements to receive the work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptance of surfaces and contiguous elements.

3.02 REFERENCE STANDARDS

- A. Follow guidelines and written specifications of the Cedar Shake and Shingle Bureau and the manufacture of the ventilating mesh underlayment.

3.03 PREPARATION

- A. Remove all existing roofing, flashing, and shim materials down to original sheathing boards and dispose of debris in accordance with all applicable laws and regulations.
- B. Any materials suspected of having asbestos such as roofing felts shall be tested by a certified laboratory prior to full scale removals; any materials found to contain asbestos shall be removed and disposed of in a manner complying with all applicable laws and regula-

tions.

- C. Remove all protruding nails and/or pound in so that heads are flush with sheathing surface.
- D. Inspect all sheathing for rots, splits or cracks that may impair the structural capacity of the roof or be unable to hold fasteners for shingles; review extent of replacement and shimming with the Preservation Consultant and obtain concurrence before proceeding with the work.
 - 1. Review extent of sheathing replacement and shimming with the Preservation Consultant and obtain concurrence before proceeding with the work.
- E. Replace defective sheathing boards with stock matching thickness and width of boards being replaced.
- F. Review conditions and details at eaves, rakes, changes in pitch, and ridges with Preservation Consultant to determine suitability of drawing details to actual conditions.
- G. Shim areas having extreme sags and unevenness as required to provide a reasonably even surface for shingle installation.
- H. Install 36" wide waterproof membrane band at all eaves and closed valleys, and 18" wide strips at rakes, change in pitch at leanto, and chimney penetration. Additional waterproof membrane is to be installed at the base of the front gable valleys as per Drawing A3.
- K. Install 30lb. roofing felts over all sheathing not indicated to receive waterproof membrane. Lap felts min. 3" in direction of flow and 4" at ends, and 3" over upper edges of waterproof membrane.
- M. Install Cedar Breather mesh over underlayments following written instruction of manufacturer. Keep edge mesh 1/2" back from edge of eaves and rakes unless otherwise noted.

3.04 SHINGLE INSTALLATION

- A. Apply wood shingles in straight, single courses, 5" to the weather on rear pitch. At front main roof and gable pitches vary exposure between 4 1/2" and 5 1/2" as required to align courses across the closed valleys between the gables and the main roof due to existing variations in roof pitch between the gables and the main roof.
- B. All shingles shall be between 3" and 8" in width. Shingles in excess of 8" wide shall be split to form shingles less than 8" wide before installation.
- C. Provide double starter courses at the eaves (i.e., a total of 3 shingles); butts of the first course are to project 1 1/2" - 2" beyond the first sheathing board.

- D. At rakes project shingles 1/2"-3/4" beyond rake trim.
- E. Space shingles apart not less than 3/16", and not more than 3/8" if laid dry, and between 1/16" and 3/16" if wet. Keep joints in each course at least 1 1/2" from joints in adjacent courses, and do not align joints in alternating courses within 1" of each other.
- F. Nails shall be driven flush to shingle surface but not so that the heads crush the wood. Place nails 3/4" to 1" from side edges and 1 1/2" to 2 " above the butt line of the following course. Where metal flashings project under shingles locate nails so as not to penetrate flashings.
- G. The use of nail guns to fasten shingles is not allowed.
- H. Include all necessary items as shown and as required to make a complete installation of wood shingle roofing, including flashings integrated with the shingle work.
- I. Coordinate shingle installation with adjacent carpentry work to rakes, chimney repairs and flashings, and installation of EPDM and copper flashings at base of front gable valleys.

END OF SECTION

SECTION 07600

FLASHING AND SHEET METAL

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to the work of this section.
- B. The extent of work is shown on the drawings.

1.02 DESCRIPTION OF THE WORK

- A. Provide all plant, materials, labor and equipment necessary and/or required for the complete execution of the work of this Section including, but not limited to:
 - 1. Provide all lead coated copper (LCC) and lead flashings required for the installation of new wood shingle roofing including, but not limited to:
 - a. Chimney Flashings:
 - i. Provide 16 oz. LCC stepped base flashings at chimney.
 - ii. Provide 4 lb. lead counter flashings and aprons at chimney
 - b. Provide 16 oz. Lead coated copper (LCC) closed valley flashings at gable valleys as indicated on Roof Plan drawing A1 (Refer to drawing 3/A5 for details).
 - c. Provide 16 oz. LCC flashings at roof vents.
 - d. Provide 16 oz. LCC flashings at change in pitch of rear leanto roof and at ridge boards. (Refer to drawings 2/A5 & 1/A8 for details)
 - e. Provide 16 oz. LCC edge strips in conjunction with EPDM flashing installation at the junctions of the front gables with the front entry porch gable.
 - f. Provide 16 oz. LCC stepped flashings at junction of front entry porch shingles to facade clapboards.
 - g. Provide 20 oz. LCC linings to new wood gutter and wood downspouts including

SECTION 09900

PAINTING AND GLAZING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General and Supplementary Conditions and Division 1 General Requirements apply to the work of this section.
- B. The extent of work is shown on the drawings, photographs, and keynote schedules.
- C. Carefully examine all of the Contract Documents for requirements which effect the work of this section. The exact scope of work of this section cannot be determined without a thorough review of all specification sections and other Contract Documents.

1.02 DESCRIPTIONS OF THE WORK

- A. Provide all plant, materials, labor and equipment necessary and/or required for the complete execution of the work of this Section including, but not limited to:
 - 1. Painting or staining all exposed surfaces of new replacement exterior woodwork including, rake boards, gutters, and downspouts, and any replacement clapboards to include:
 - a. Application of priming paint or stain to all surfaces including hidden surfaces of all new wood elements.
 - b. Caulking of minor cracks, fissures, and surface defects with putty or sealant.
 - e. Finish painting exposed surfaces with two (2) coats of solid bodied stain.
 - 2. The intent of the painting is match the finish of adjacent existing stained woodwork, and to protect hidden surfaces by complete backpriming.
- B. Definitions
 - 1. The term “paint”, as used herein, means all coating systems materials including primers, transparent preservatives, stains, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.03. RELATED WORK SPECIFIED ELSEWHERE

1.04 INTENT

- A. It is the intent of this work to protect all surfaces of all new wood elements with a sound, lasting, visually attractive coating of paint and/or wood preservative.

1.05 QUALITY ASSURANCE

- A. The work of this Section shall be accomplished by a specialist firm of established reputation for performance of work of the highest quality having not less than five years of successful experience in the preparation and painting of architectural trim and woodwork on buildings of similar age and type to the Witch House, or, if newly organized, whose personnel have previously established a similar reputation in the same field, and which is regularly engaged in and maintains a regular force of workman skilled in the work of this section.
- B. Provide sufficient workmen and supervisors who shall be present at all times during execution of this portion of the Work, and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.
- C. The Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.
- D. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.
- E. The Witch House is list on the STATE AND NATIONAL REGISTERS OF HISTORIC PLACES. All work performed shall meet the Secretary of the Interior's Standards for Historic Preservation Projects.

1.06 TESTS

- A. Testing Agency: The Owner may employ an independent testing agency to perform tests, evaluations and certifications. Cooperate and permit samples of materials to be taken as they are used. The Contractor shall pay all costs of tests which show failure to comply with Contract Documents.

1.07 SUBMITTALS

- A. Work Plan
 - 1. Submit work plan detailing schedule proposed to accomplish the work including the order in which specific elevations and work items will be worked on, coordination

with Carpentry, roofing and flashing work; protection of entry ways and paths used by the employees, residents and general public using the property; protection of interior surfaces and finishes in the building from inclement weather, dust and construction debris and vibration, and theft and vandalism. Designate key personnel to coordinate work and schedule with the museum staff.

B. Submit list of all materials proposed for use, indicating:

1. Manufacturer.
2. Product name.
3. Surface for which proposed.

C. Samples.

1. Submit samples of paint for review of color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor. Provide a listing of the material and application for each coat of each finish sample.
 - a. Provide two (2) samples of each stain color and type proposed for use on 12" x 12" hardboard cards prior to installation; resubmit until finish is accepted by Preservation Consultant.
 - b. Provide samples of stains in selected color(s) and type(s) on 2' long areas of new trim and existing weathered window frames; reapply until finish and color is accepted by Preservation Consultant.
2. Provide samples of each type of paints, glazing putty, fillers, sealants, and other materials proposed for use. Provide unopened container of each material with manufacturer's original labeling.
3. Product Data. Submit manufacturers' technical data and Materials safety Data Sheets for each product specified or proposed for use including recommendations for their application and use.

C. Field Constructed Mock-ups. Prior to the start of production work for the respective items, provide full size mock-ups for each of the items listed in locations designated by the Preservation Consultant. Mock-ups will be used to measure standards of workmanship, finish, texture, and material, and qualifications of workman with regard to requirements set forth in the Contract Documents. Obtain written acceptance of Mock-up from Preservation Consultant before proceeding with production painting work. Repeat mock-

up procedure as required until accepted by Preservation Consultant. Protect and mark accepted mock-ups, retain in undisturbed condition during construction to be used as a standard for acceptance of completed work. Unless otherwise indicated accepted mock-ups may be incorporated into production work.

1. Application of finish paint to an area of new rake boards or gutters at least 2' long demonstrating the color and surface of the finish paint(s).

1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers. Store materials only in designated areas and in strict compliance with manufacturers' instructions and recommendations. Protect from freezing and damage.
- B. Avoid the possibility of fire by removing flammable materials, solvents and spirits from the project site or by storing materials in UL approved fire-resistive cabinets. Keep work area free from flammable waste and soiled rags.

1.09 PROJECT CONDITIONS

- A. Weather, Temperature, and Humidity: Perform work only when existing and forecasted conditions are within the limits established by manufacturers of the materials and products used.
 1. Water-Base Paints: Apply only when temperature of surfaces to be painted and surrounding air temperatures are between 50°F and 90°F, unless otherwise permitted by manufacturer's printed instructions.
 2. Solvent-Thinned Paints: Apply only when temperature of surfaces to be painted and surrounding air temperatures are between 45°F and 95°F, unless otherwise permitted by paint manufacturer's printed instructions.
 3. Conditions: Do not apply paint in snow, rain, fog or mist, or when relative humidity exceeds 85%, to damp or wet surfaces, or when the moisture content of the substrate is in excess of 15% as measured by an electronic moisture meter unless otherwise permitted by paint manufacturer's printed instructions.
- B. Prevent paints, and sealants from staining surrounding building materials and objects. Clean up spills and drips immediately.
- C. Proceed with work only when substrate construction and penetrating work is complete. Do not apply finish in area where dust is being generated.

- D. Comply with manufacturer's requirements and recommendations for ventilation.
- E. Protect property, employees, and users of the property from possible injury or damage by construction activities.
- F. Provide tarpaulins or scrim covers on the outside of staging and on the ground at all active work areas during preparation as required to contain dust and debris.

1.10 COORDINATION

- A. Convene a pre-installation conference to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
- B. Coordinate this work with work specified in other sections. Furnish information on finish materials to be used in the field to ensure that correct prime coats are used in the shop.

1.12 EXTRA STOCK

- A. Amount: Upon completion of the work of this Section, deliver to the owner an extra stock equaling 10% of each color, type, and gloss of paint used on the Work.
- B. Packaging: Tightly seal each container and clearly label with the contents and location used.

1.13 GUARANTEE

- A. Provide written warranty ensuring that all paint films and glazing shall remain sound and free of defects, cracks, peeling, deterioration, and discoloration for a period of two (2) years from the date of substantial completion, and that any such defects occurring within the warranty period will be repaired or replaced in a manner conforming with the requirements of these Contract Documents.

PART 2: – PRODUCTS

2.01 PAINT AND FILLERS

- A. Painting materials
 - 1. All materials used in the work shall be pure, of best quality, and "Top of the Line" of the manufacturer. Materials not displaying the manufacture's identification as a standard best-grade product will not be acceptable.
 - 2. Undercoats and thinners: Provide undercoat paint produced by the same manufacturer as the finish coat. Use only the thinners recommended by the paint manufacturer, and

- use only to the recommended limits. Insofar as practicable, use undercoat, finish coat, and thinner material as parts of a unified system of paint finish.
3. Follow manufacturer's recommendations for suitability of specific products for each specific substrate, and for application procedures.
 4. Secondary products: Products not specified by name and required for the job, such as shellac, thinners, putty, shall be "best grade" or "first Line" products of a reputable manufacturer and acceptable to the manufacturer of the paint coatings.
 5. Paint shall be top grade by California Paints, or equal as follows:

Prime and finish paint: Storm Stain Semi-transparent Cleartone Base # 21595 by California Paints, tinted as directed by Preservation Consultant. A single color will be used for all work.

C. Fillers

1. Putty filler: DAP '33' Glazing, or Linseed Oil Putty, both by DAP, Inc., Dayton, Ohio, or equal
2. Sealant/caulking compounds for wood: printable, polysulphide or poly urethane based, one part elastomeric sealant complying with FS-TT-S-00230, Class A, Type II (non-sag).
 - a. Moorlastic 55 Year Urethane Acrylic Sealant 465 by Benjamin Moore Paints, Fed. Spec. TT-S-00230C Type II Class A..
 - b. Sonolastic NPI, by Sonnoborn Construction Systems, Minneapolis, Minnesota

PART 3: EXECUTION

3.01 ACCEPTANCE OF SURFACE CONDITIONS

- A. Inspection: Prior to installation of the work of this Section, the applicator shall carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence. Coordinate work with Woodwork Conservation Contractor.
- B. Discrepancies: Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.
- C. Responsibility: The Applicator shall be solely responsible for the finishing work and shall prepare substrates as needed to obtain the highest quality finished surfaces.

3.02 SURFACE PREPARATION

- A. Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.
- B. Clean surfaces to be painted before applying paint or surface treatments. Remove any oil and grease prior to mechanical cleaning. Sandpaper smooth those finished surfaces exposed to view, and dust off. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.
- C. Filling of small defects: Fill small, shallow fissures less than 1/16" wide and 1/8" deep in wood surfaces with specified putty or sealant to produce a smooth, uniform surface that will not trap water. Putty filling is to be executed after application of prime coat of paint, and is to be carried out only in locations scheduled to receive finish painting.
- D. Set all exposed or rusting nailheads and fill holes with specified putty.

3.03 MATERIALS PREPARATION

- A. Mix and prepare painting materials in strict accordance with the manufacturer's recommendations. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing, and application of paint in a clean condition, free from foreign materials and residue.
- B. Stir all materials before application to produce a mixture of uniform density, and as required during the application of materials. Do not stir into the material any film which may form on the surface. Remove the film and, if necessary, strain the material before using.
- C. Do not thin materials or introduce additives without approval of preservation consultant.
- D. Slightly vary the color of succeeding coats; Tint priming coats to be a slightly lighter shade of the color scheduled for the finish coats. Do not apply additional coats until the complete coat has been inspected and accepted.

3.04 APPLICATION

- A. Apply paint and stain in accordance with the manufacturer's written directions. Use applicators and techniques best suited for the type of material being applied. No spraying or system of application other than by hand brushing will be allowed.
- B. Brush out and work all brush coats onto the surfaces in an even film. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable. Make edges of paint adjoining other materials or colors sharp and

clean without overlapping.

- C. Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of finish, color and appearance acceptable to Preservation Consultant
- D. Apply each material at not less than the manufacturer's lowest recommended spreading rate and at the highest dry film thicknesses recommended by their manufacturers.
- E. Allow sufficient drying time between coats as recommended by the manufacturer. Modify the period as recommended by the material manufacturer to suit adverse weather conditions.
- F. Oil-base and oleo-resinous solvent-type paints shall be considered dry for recoating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

3.05 CLEAN UP

- A. Clean-up: During the progress of the work, remove from the Project daily all discarded paint materials, rubbish, cans and rags.
- B. Upon completion of painting work, clean all windows glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces. Use only paint thinner and rags to remove spattered paint from window glass, and apply minimum pressure when doing so.

END OF SECTION