

SPECIFICATION

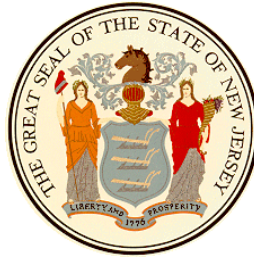
Cedar Roof Replacement

Indian King Tavern
Haddonfield, Camden County, N.J.

DPMC PROJECT NO. P1260-00

STATE OF NEW JERSEY

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



DEPARTMENT OF THE TREASURY

Elizabeth Maher Muoio, State Treasurer

DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION

Christopher Chianese, Director

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Shawn M. LaTourette, Commissioner

Historic Building Architects, LLC

312 West State Street
Trenton, NJ 08618

Date: 11/17/22

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HADDONFIELD, CAMDEN COUNTY, NEW JERSEY
DPMC NO. P1260-00

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Access to site.
4. Coordination with occupants.
5. Work restrictions.
6. Specification and Drawing conventions.
7. Miscellaneous provisions.

- B. Related Requirements:

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

1.3 PROJECT INFORMATION

- A. Project Identification: DPMC Project No. P1260-00 Cedar Roof Replacement – Indian King Tavern

1. Project Location: Camden County, 233 Kings Hwy E, Haddonfield, NJ 08033

- B. Owner: New Jersey DEP, Office of Resource Development, 20 West State Street, 3rd Floor, Trenton, NJ 08625

- C. Architect: Historic Building Architects, LLC, Annabelle Radcliffe-Trenner, 312 West State Street, Trenton, NJ 08618, Tel 609-393-3999, email: art@hba-llc.com

- D. Architect's Consultants: Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. KSI Professional Engineers, LLC, Kevin Sommons, Principal, 149 Yellowbrook Road, Farmingdale NJ 07727, Tel 732-938-2666, ksommons@ksi-pe.com

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1.4 SCOPE OF WORK INCLUDED

A. 01 General Requirements

1. Install site set up.
2. Remove existing deteriorated stucco at chimneys CH01 and CH02, as indicated in the drawings.

B. 02 Site Construction

1. Selective demolition of existing cedar shingles and flashing associated with roof replacement, as indicated in the drawings.
2. Dismantling of unstable masonry at chimney CH03 down to roof level.
3. Selective removal of rear porch standing seam metal roof and cedar shingle roof below down to battens and deck boards.
4. Remove existing deteriorated trim associated with roof replacement, as indicated in the drawings.

C. 04 Historic Masonry Restoration

1. Restore chimney CH03.

D. 06 Wood

1. Install dutchman repair at trim associated with roof replacement, as indicated in the drawings.
2. Replacement of eave framing and blocking, as needed.
3. Replacement of roof battens, as needed.
4. Install new roof battens, as dimensioned in drawings, and as needed.
5. Replacement of existing deck boards at roof eaves, as needed.
6. Install new deck boards at all roof ridges, and as dimensioned in drawings.
7. Rafter Sistering, as needed.

E. 07 Thermal and Moisture Protection

1. Install new wood shingle roofs, including roofing felt and ice and water shield underlayment, as indicated in the drawings.
2. Install new stepped flashing, as indicated in the drawings.
3. Install new cedar roof at rear porch roof, including roofing felt and ice and water shield underlayment, as indicated in the drawings.
4. Install new lead-coated copper built in gutters at upper roofs and rear one-story roof.
5. Install new downspouts and associated storm drainage, as indicated in drawings.

F. 09 Finishes

1. Patch stucco at chimneys CH01 and CH02 and re-stucco chimney CH03.
2. Complete touch up painting at all new stucco and stucco patches to match existing paint colors.
3. Complete miscellaneous touch up painting at all roof related trim to match existing paint colors.

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G. 31 Earthwork

1. Install temporary access scaffolding and shoring.

1.5 ACCESS TO SITE

- A. Owner Occupancy: The Museum will remain occupied at all times during construction. The contractor must allow for occupancy of the building, as well as the site.
- B. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- C. Use of Site: Limit use of Project site to Work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 1. Limits: Confine construction operations to area as designated on Sheet A001.
 2. Walkways and Entrances: Keep walkways and entrances serving premises clear and available to Owner, Owner's employees, and emergency access at all times. Do not use these areas for storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
 - c. The egress routes from the museum are to be carefully protected during construction.
- D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- E. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.
- F. Contractor is responsible for all sidewalk and road closings and must pay all associated fees.

1.6 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and **existing** building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.

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2. Notify Owner not less than 48 hours in advance of activities that will affect Owner's operations.

1.7 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.
 1. Weekend Hours: Not permitted on weekends unless otherwise authorized by Owner and with 48 hours advance notice to the Owner.
 2. Early Morning Hours: Notify Owner 48 hours in advance of work that will occur prior to 7:00 a.m.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 1. Notify Architect and Owner not less than 48 hours (2 days) in advance of proposed utility interruptions.
 2. Obtain Architect and Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 1. Notify Architect and Owner not less than 48 hours (2 days) in advance of proposed disruptive operations.
 2. Obtain Architect and Owner's written permission before proceeding with disruptive operations.
- E. Restricted Substances: Use of tobacco products and other controlled substances on Project Site is not permitted.
- F. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
 1. Maintain list of approved screened personnel with Owner's representative.
- G. Protection: Provide temporary protection as follows:
 1. Windows and openings as needed to prevent dust and debris from infiltrating the building interior.
 2. Protect existing ceiling framing and finishes to prevent any damage and to prevent dust and debris from infiltrating the building interior.

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H. Night Seals:

1. Only as much roofing material and flashing as can be made weather tight shall be installed each day.
2. Install temporary watertight night seals around all exposed edges of the roofing assembly at the end of each work day and when work must be postponed due to inclement weather.

1.8 SECURITY AND SIGNAGE PROCEDURES

- A. Provide secure dry storage for materials for which the Owner has made payment and which are stored on site.
- B. Secure completed work as required to prevent loss.
- C. At the close of work on Fridays, the contractor's supervisor will meet with the Owner's designated representative and ensure that the building site is clean, properly secured, and that all security measures have been made.

1.9 HISTORIC SIGNIFICANCE

- A. The Indian King Tavern Museum is a key building in the Haddonfield Historic District, which was listed in the New Jersey Register of Historic Places on 18 April 1980 and in the National Register of Historic Places on 21 July 1982.

The Indian King Tavern Museum is over 200 years old and is located on Kings Highway in historic Haddonfield, NJ. It is New Jersey's first state-owned historic site (acquired in 1903) and it is where New Jersey completed its transition from colony to state. Here, on the second-floor meeting room, laws that revised election procedures, created township governments, and set up state courts were passed. Measures imposing martial law, strengthening the militia, regulating a war economy, and providing emergency support to the Continental Army were taken.

The inn was purchased by the state in 1903 and became the first property preserved as a museum by New Jersey. The building's appearance dates to its 1909 restoration, as part of the Colonial revival movement. For most of the 20th century, it served as the club house for groups associated with the American Revolution. In the 1980's, the building became a museum. Currently, The Indian King Tavern Museum offers free tours and history lessons to visitors.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

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SECTION 040343 - HISTORIC MASONRY RESTORATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Extent of masonry restoration work:
 - 1. Restore chimney 03.
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Section 013591 "Historic Treatment Procedures" for general historic treatment requirements.
 - 2. Section 092400 "Stucco Restoration".

1.3 DEFINITIONS

- A. Low-Pressure Spray: 100 to 300 psi pressure meters must be installed on equipment at all times.
- B. Repointing: The process of raking out (removing) mortar and replacing it with new mortar.
- C. Pointing: The process of placing new mortar in existing joint spaces that have previously been raked out. The term does not include the raking out process.
- D. Tuck Pointing: The process of touching up existing mortar joints by filling in recesses with new mortar, without first raking out the joints.
- E. Dutchman: Partial stone replacement. Installation of a new stone into an existing stone.
- F. Control Sample: A sample of the quality of work representing the minimum quality required of the contractor.
- G. Stone Resetting: Careful removal of unstable stone units such as caps, sills and headers; and severely spalled bricks. Rebuilding or reinstallation and setting of masonry units with anchors.
- H. Retooling: The resurfacing of existing damaged stone in-situ using hand tools.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
- B. Shop Drawings: For the following:
 - 1. Foundation walls to be rebuilt. Drawings to be coordinated with concrete footing work.
 - 2. New anchors, including drilled-in stainless steels pins. See attached detail.
- C. Samples for Verification: Before erecting mockup, submit samples of the following:

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1. Each type of sand used for pointing mortar.
 - a. For blended sands, provide Samples of each component and blend sample.
 - b. Identify sources, both supplier and quarry, of each type of sand.
 2. Each type of pointing mortar in form of sample mortar strips, 6 inches long by 1/2 inch wide, set in aluminum or masonry channels.
 - a. Include with each sample a list of ingredients with proportions of each. Identify sources, both supplier and quarry, of each type of sand and brand names of cementitious materials and pigments if any.
 3. Each type of anchor pin to be used indication location to be used with product data attached to submittal.
- D. Qualification Data: For restoration specialists including field supervisors, chemical cleaner manufacturer and consolidant manufacturer.
- E. Restoration Program: For each phase of restoration process, provide detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of restoration work including protection of surrounding materials on building and Project site.
1. Include methods for keeping pointing mortar damp during curing period.
 2. If materials and methods other than those indicated are proposed for any phase of restoration work, provide a written description, including evidence of successful use on comparable projects, and a testing program to demonstrate their effectiveness for this Project.
- F. FIELD-CONSTRUCTED MOCK-UPS

Prior to start of general masonry restoration, prepare the following sample panels on the building as directed by the Architect. Obtain Architect's review of visual qualities before proceeding with the work. Retain acceptable panels in undisturbed condition, suitably marked on the building and noted on drawings submitted to the Preservation Architect, during construction as a standard for judging completed work.

1. Repointing: Prepare 2 separate sample areas of approximately 3' high by 3' wide for each type of repointing mortar required, at least one for demonstrating methods and quality of workmanship expected in removal of mortar from joints at both brick and stone and the other for demonstrating quality of materials and workmanship expected in pointing mortar joints.
2. Brick Rebuilding: Prepare a mock up demonstrating ability to rebuild brick chimney to demonstrate skill and quality of workmanship.
3. The Contractor shall prepare up to three additional mockups of each mortar, joint type, and mortar color without further compensation. Approved test panel(s) shall become part of the work and shall serve as the quality standard for all subsequent work.
4. Source of Materials: Identify the source of each appropriate material for repointing and surface cleaning. Maintain the same products throughout for consistency of work.

1.5 QUALITY ASSURANCE

- A. Restoration Specialist Qualifications: Engage an experienced masonry restoration firm to perform work of this Section. Firm shall have completed work similar in material, design, and

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extent to that indicated for this Project with a record of successful in-service performance. A minimum of 5 years successful experience in comparable masonry restoration projects and employing personnel skilled in the restoration processes and operations indicated.

1. Field Supervision: Restoration specialist firm shall maintain experienced full-time supervisors on Project site during times that stone restoration and cleaning are in progress. Supervisors shall not be changed during Project except for causes beyond control of restoration specialist firm.
 2. Restoration Worker Qualifications: Persons who are experienced and specialize in restoration work of types they will be performing.
- B. Source Limitations: Obtain each type of material for stone restoration (stone, cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- C. MSDS: Maintain file of all material safety data sheets for products brought onto site.
- D. Work Hazards: Strict compliance with all applicable OSHA requirements is essential.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products. Protect from freezing, moisture, and contamination.
- 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 hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- D. Store lime putty covered with water in sealed containers.
- E. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.7 PROJECT CONDITIONS

- F. Repoint mortar joints and repair stone only when air temperature and the substrate is between and 40 and 90 deg F and is predicted to remain so for at least 7 days after completion of work.
- G. Do not work in temperatures below 40 deg F when the substrate is colder than 40 deg F or when the temperature is expected to fall below 40 deg F for 48 hours after installation of repair mortars. Building an enclosure and heating areas to maintain this temperature may only be done with the written approval of the material manufacturer. Remove work exposed to lower temperatures as directed by the Preservation Architect. Protect repaired mortar from direct sunlight and wind using protection measures reviewed when the ambient air temperature exceeds 70 deg F. Do not use or prepare mortar when ambient air temperature is above 90° F at the location of the work.
- H. Hot Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and patching materials. Provide artificial shade and wind breaks and use cooled materials as required. Do not

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apply mortar to substrates with temperatures of 90 deg F and above.

- I. Prevent mortar used in repointing and repair work from staining face of surrounding masonry and other surfaces. Remove immediately grout and mortar in contact with exposed masonry and other surfaces.
- J. Protect sills, ledges, projects, and all surfaces from mortar droppings.
- K. Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and material of other trades, the building, and the public.

1.7 SEQUENCING AND SCHEDULING

- A. Order replacement materials at earliest possible date, to avoid delaying completion of the Work.
- B. Order sand for repointing mortar immediately after approval of Tray Samples. Take delivery of and store at Project site a sufficient quantity of sand and pigment to complete Project. Additional orders of sand and pigment are not permitted without resubmittal of samples.
- C. Perform stone restoration work in the following sequence:
 - 1. Rebuild existing stone, foundation walls reusing existing stone.
 - 2. Rake out joints that are to be repointed.
 - 3. Point mortar joints.
 - 4. Inspect for open mortar joints and repair.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
 - 2. Products: Subject to compliance with requirements, provide one of the products specified.
 - 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
 - 4. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 STONE MATERIALS

- A. Stone General: No replacement stone is anticipated. Contractor is responsible for carefully salvaging existing stone for use. The existing stone is found local in the Pinelands and is referred to as “bog” ironstone.
- B. Building (Common) Brick: ASTM C 62, Grade SW.
 - 1. Unit Compressive Strength: Match existing.
 - 2. Size: Match size of existing brick, or if not adjacent to face brick, match existing brick plus or minus 1/8” for width and height and plus or minus ¼ inch for length.

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3. Supply salvaged brick to match existing.

2.3 MORTAR MATERIALS FOR FIELDSTONE FOUNDATION AND BRICK WINDOW SILLS

A. Natural Hydraulic Lime:

1. Product: NHL 3.5
2. Natural Hydraulic Lime Manufacturer: St. Astier, France
3. Supplier: Trans Mineral USA, Inc., Tel 707-769-0061, www.limes.us

B. Mortar Sand: ASTM C 144 unless otherwise indicated.

1. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match. Except for joints less than 1/4" use aggregate graded with 100% passing the #4 sieve for fieldstone walls, and #8 sieve for all other joints.
2. Color: Natural sand of color necessary to produce required mortar color.
3. Provide sand with rounded edges.
 - a. Manufacturer: George Schofield Co. Inc., 831 E. Main Street, Bridgewater, NJ 08807, Tel 800-827-6257.
 - b. Sand Type 125

C. Water: ASTM C 270, potable, pH neutral.

2.4 MORTAR REPLICATION

A. Repointing Mortar: The replication mortar was prepared using the following mixture.

1. 1 part Natural Hydraulic Lime to 3 parts #125 George Schofield Sand.

2.5 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

B. Do not use admixtures of any kind in mortar.

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site,

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plants, and surrounding buildings from harm resulting from Historic Masonry restoration work.

- B. Prevent mortar from staining face of surrounding masonry and other surfaces.
 - 1. Cover sills, ledges, and projections to protect from mortar droppings.
 - 2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
 - 3. Immediately remove mortar in contact with exposed masonry and other surfaces.
 - 4. Clean mortar splatters from scaffolding at end of each day.

3.2 STONE REBUILDING

- A. At locations indicated, carefully dismantle stone and salvage for reuse.
- B. Support and protect remaining stonework that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.
- C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose masonry units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.
- D. Remove in an undamaged condition as many whole stone units as possible.
 - 1. Remove mortar, loose particles, and soil from stone by cleaning with hand chisels, brushes, and water.
 - 2. Remove sealants by cutting close to stone with utility knife and cleaning with solvents.
 - 3. Store stone for reuse, as indicated.
 - 4. Deliver cleaned stone not required for reuse to Owner, unless otherwise directed.
- E. Clean stone surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.
- F. Rebuild stone with salvaged stone, or with new stone matching existing stone (not anticipated).
 - 1. Do not allow face bedding of stone. Before setting, inspect to verify that each stone has been cut so that when it is set in final position, natural bedding planes are essentially horizontal and pitch downward and outward. Tool exposed mortar joints in repaired areas to match joints of surrounding existing stonework.
 - 2. Rake out mortar used for laying stone before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing stone, and at same time as repointing of surrounding area.
- G. Install stone into bonding and coursing pattern of existing stone. Finish edges to blend with appearance of edges of existing stone.
 - 1. Maintain joint width for replacement stone to match existing joints.
 - 2. Use setting buttons or shims to set stone accurately spaced with uniform joints.
- H. Set replacement stone with completely filled bed, head, and collar joints. Butter vertical joints for full width before setting and set units in full bed of mortar unless otherwise indicated.

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1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing stonework.
2. Rake out mortar used for laying stone before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing stone, and at same time as repointing of surrounding area.
3. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

3.3 BRICK SILL REPAIR

- A. This section applies to locations where the brick sills are loose and unstable and require repointing.
- B. At locations indicated or where directed by Architect, remove brick. Carefully remove entire units from joint to joint, without damaging units, in a manner that permits replacement with full-size units or reuse of existing unit.
- C. Remove in an undamaged condition as many whole brick units as possible.
 1. Remove mortar, loose particles, and soil from stone by cleaning with hand chisels, brushes, and water.
 2. Remove sealants by cutting close to stone with utility knife or chisel and removing remaining sealant by grinding.
- D. Clean masonry surrounding repaired areas by removing mortar, dust, and loose particles in preparation for replacement.
- E. Re-install brick into sill. If cutting is required, use a motor-driven saw designed to cut masonry joints with clean, sharp, unchipped edges.

3.4 REPOINTING EXISTING MASONRY

- A. Rake out and repoint mortar joints to the following extent:
 1. All joints in areas indicated.
 2. Joints where mortar is missing or where they contain holes.
 3. Cracked joints where cracks can be penetrated at least 1/4 inch by a knife blade 0.027 inch thick.
 4. Cracked joints where cracks are 1/8 inch or more in width and of any depth.
 5. Joints where they sound hollow when tapped by metal object.
 6. Joints where they are worn back 1/4 inch or more from surface.
 7. Joints where they are deteriorated to point that mortar can be easily removed by hand.
 8. Joints, other than those indicated as sealant-filled joints, where they have been filled with substances other than mortar.
 9. Joints in areas marked for heavy retooling on the drawings.
- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows:
 1. Remove mortar from joints to depth of joint width plus 2-1/2 times joint width, but not less than 1/2 inch or not less than that required to expose sound, unweathered mortar.

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2. Remove mortar from stonework and brick surfaces within raked-out joints to provide reveals with square backs and to expose stone for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spill edges of stone units or widen joints. Replace or patch damaged stone or brick units as directed by Architect.
 - a. Cut out mortar by hand with chisel and mallet. Do not use power-operated grinders without Architect's written approval based on submission by Contractor of a satisfactory quality-control program and demonstrated ability of operators to use tools without damaging stone. Quality-control program shall include provisions for supervising performance and preventing damage due to worker fatigue.
 - b. Cut out center of mortar joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and mallet. Strictly adhere to written quality-control program. Quality-control program shall include provisions for demonstrating ability of operators to use tools without damaging stone, supervising performance, and preventing damage due to worker fatigue.
- D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose stone, rotted wood, rusted metal, and other deteriorated items.
- E. Point joints as follows:
 1. Rinse stonework-joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen stonework-joint surfaces before pointing.
 2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
 3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing stone has worn or rounded edges, slightly recess finished mortar surface below face of stone to avoid widened joint faces. Take care not to spread mortar over edges onto exposed stone surfaces or to featheredge mortar.
 4. When mortar is thumbprint hard, tool joints to match original appearance of joints. Remove excess mortar from edge of joint by brushing.
- F. Cure mortar by maintaining in thoroughly damp condition for at least 72 hours, including weekends and holidays.
 1. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
 2. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.

3.5 FINAL CLEANING

- A. After mortar has fully hardened, thoroughly clean exposed stone surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at

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low pressure.

1. Do not use metal scrapers or brushes.
 2. Do not use acidic or alkaline cleaners.
- B. During the work, remove from the site discarded cleaning and coating materials, rubbish, cans and rags at the end of each workday.
- C. Wash adjacent woodwork and other non-masonry surfaces. Use detergent and soft brushes or cloths.
- D. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- E. Sweep and rake adjacent pavement and grounds to remove mortar and debris. Where necessary, pressure wash surfaces to remove mortar, dust, dirt, and stains.
- F. Test masonry surface to confirm pH neutral range 6-8 and submit results to Architect as part of closeout.

END OF SECTION 040343

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SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Framing repairs with dimension lumber.
 - 2. Wood blocking, cants, and nailers.
 - 3. Wood furring and grounds.
 - 4. Wood sleepers.
- B. Related Requirements:
 - 1. Section 061516 "Wood Roof Decking."

1.3 DEFINITIONS

- A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal or greater size but less than 5 inches nominal size in least dimension.

1.4 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.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 - 3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.

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4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.5 QUALITY ASSURANCE

- A. Source Limitations for Engineered Wood Products: Obtain each type of engineered wood product through one source from a single manufacturer.
- B. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria":
 1. Dimension lumber framing.
 2. Timber.
 3. Miscellaneous lumber.

1.6 DELIVERY, STORAGE, AND HANDLING

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

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. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.
 3. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 15 percent unless otherwise indicated.

2.2 DIMENSION LUMBER FRAMING

- A. Other Framing: grade per structural engineer's drawings species:
 1. Douglas fir-larch; WCLIB or WWPA.

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2.3 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Battens - Hemlock
 - 3. Cants – Cedar at gables
- B. Concealed Boards: 15 percent maximum moisture content of the following species and grades:
 - 1. Hem-fir or hem-fir (north), Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
 - 2. Spruce-pine-fir (south) or spruce-pine-fir, Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
- C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

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 all carpentry, provide fasteners of Type 316 stainless steel.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Screws for Fastening to Metal Framing: ASTM C 1002, length as recommended by screw manufacturer for material being fastened.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

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

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- B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- C. Do not splice structural members between supports unless otherwise indicated.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

END OF SECTION 061053

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SECTION 061516 - WOOD ROOF DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section includes the following:
 - 1. Solid-sawn roof deck boards as shown on the drawings.
 - 2. Roof battens to match existing battens.
 - 3. Marine grade plywood decking.
- B. Related Requirements:
 - 1. Section 061053 "Miscellaneous Rough Carpentry" for wood furring and blocking.

1.3 ACTION SUBMITTALS

- A. Drawing:
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treatment plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
 - a. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before further fabrication or shipment to Project site.
 - 2. Submit a drawing showing the location and quantity of replacement wood roof deck.
- B. Product Data: For each type of product.
 - 1. Match existing wood species for wood decking and battens. See Schedule.
- C. Samples: 24 inches long, showing the range of variation to be expected in appearance of wood decking. Several samples may be required to match roof decking in different locations. Submit a 6 inches long sample of the existing decking to be matched with proposed replacement decking. Refer to Rough Carpentry for wood sample identification requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Schedule delivery of wood roof decking to avoid extended on-site storage and to avoid delaying the Work.

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- B. Store materials under cover and protected from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings. Stack wood roof decking with surfaces that are to be exposed in the final Work protected from exposure to sunlight.

1.5 QUALITY ASSURANCE

- A. Standard for solid-sawn wood decking: Comply with AITC 112, “Standard for Tongue-and-Groove Heavy Timber Roof Decking.”
- B. Forest Certification: Provide wood decking produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2 “principals and criteria.”

PART 2 - PRODUCTS

2.1 WOOD ROOF DECKING, GENERAL

- A. General: Comply with DOC PS 20 “American Softwood Lumber Standard,” and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Grade Stamps: Provide solid-sawn wood decking with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, species, grade, moisture content at time of surfacing, and mill. Apply grade stamp to surfaces that will not be exposed to view.
- C. Moisture Content: Provide wood decking with 15 percent maximum moisture content at time of dressing.
- D. Preservative Treatment: Pressure treat solid-sawn wood decking according to AWPA C31 with inorganic boron (SBX) and redry wood to 15 percent maximum moisture content. For all T&G Decking Boards at Stucco Repairs.

2.2 SOLID-SAWN WOOD ROOF DECKING

- A. Standard for Solid-Sawn Wood Roof Decking: Comply with AITC 112.
- B. Roof Decking Species: Assume to be similar to the following species: Eastern White Pine.
- C. Roof Batten Species: Assume to be similar to the following species: Eastern Hemlock.
- D. Decking Size: The size will vary and must be matched to existing “actual sizes” to avoid any unevenness in the roof decking. New decking sizes are indicated in drawings. Board lengths are not required to match but the width of the boards (over 6” nominal) must have at least 12 growth rings per inch to avoid cupping. The board thickness must match the existing deck board thickness. For all sizes see drawings.
- E. Moisture: Moisture content between 12% and 15% for all deck boards.

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- F. Decking Grade: Dense Standard Decking.
- G. Decking Grade: Select to match existing and as indicated in drawings for new deck boards. Assume no more than one knot per 2'-0" length. Maximum knot size ½" diameter.
- H. Face Surface: Saw textured, smooth, or to match existing.
- I. Edge Pattern: Butt Jointed.

2.3 PLYWOOD DECK

- A. General: All plywood to be in compliance with American Plywood Association Standards.
- B. Pitched Roof Deck: Use APA Underlayment Ext. grade, Marine plywood for moisture conditions Type PSI.
 - 1. APA Structural 1 Rated Sheathing Exterior
 - 2. Face veneer shall be grade A. Back veneer shall be grade B. Grade A-A-B.
 - 3. Wood Species Group: Douglas Fir or Southern Pine.
 - 4. Thickness: See drawings, typically 1/4" to 3/4" thick.
 - 5. Section Property Table: Touch-sanded.
 - 6. Gap sheathing product no more than 1/8" to prevent buckling.
 - 7. Moisture Content: 5% maximum.

2.4 ACCESSORY MATERIALS

- A. Fasteners for Solid-Sawn Roof Decking: Provide fastener size and type complying with AITC 112 for thickness of deck used.
 - 1. Nails: Common; complying with ASTM F 1667, Type I, Style 10.
 - 2. Spikes: Round; complying with ASTM F 1667, Type III, Style 3.
 - 3. Fastener Material: Stainless Steel 316.

Fasteners for Plywood Deck: All attachments to be stainless steel Type 304 and must meet ASTM E488 and AC 106 criteria and ASME B18.6.1.

- 1. Spacing maximum: 18" o.c. with 1" from eaves edge and 12" o.c. at edge stagger anchors with adjacent sheet and maintain 1" edge distance.

PART 3 - EXECUTION

3.1 REMOVAL

- A. Remove all rotten roof deck or as noted on the drawings. Document quality removed and refer to Base Contract and Unit Prices for quantity of replacement.
- B. Submit photographs of roof deck and update Owner and Architect on condition of deck and replacement quantities for each phase of roof removal work.
- C. Submit a tabulation of roof deck replacement quantities with supporting photographs.

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3.2 EXAMINATION

- A. Examine existing conditions and support framing in areas to receive replacement wood roof deck board and battens.
- B. Remove all rotten deteriorated deck boards and battens and photo document to provide proof of replacement. Salvage all removed material for review by architect.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. Install solid-sawn wood roof deck boards to comply with AITC 112.
- B. Install wood battens to align with existing.
- C. Install solid-sawn wood decking to replace deteriorated wood decking. Must match existing profile, size, wood species and grade.
- D. Secure roof decking with stainless steel attachments.

3.4 ADJUSTING

- A. Repair damaged surfaces and finishes after completing erection. Replace damaged roof decking if repairs are not approved by Architect.
- B. Insure the replacement decking is flush and even with all existing decking. Provide photographs prior to covering with underlayment.

3.5 PROTECTION

- A. Provide water-resistive barrier over roof decking as the Work progresses to protect roof decking until roofing is applied.
- B. Verify moisture content of roof deck boards.
- C. If roof decking becomes wet, even after protection measure, replacement will be required.

END OF SECTION 061516

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SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Exterior wood trim.
2. Wood clapboard replacement and repair.

B. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view.
2. Section 099113 – "Exterior Painting".

1.3 ACTION SUBMITTALS

A. Provide a wood species ID by a wood scientist.

B. General: Submit product data and manufacturer's literature.

1. Provide a removal plan. Submit protection drawings for each window type. Provide bracing and all necessary shoring in opening when sash removed.

C. Shop Drawings:

1. Detailed photograph of each frame indicating scope of repair.
2. Submit a schedule showing the scope of repair work.

D. Samples for Initial Selection: For each type of profile indicated. Also, provide a 6" length of the existing profile to be matched. Provide samples of all profiles requiring new replacement sections.

E. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

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- F. Samples: For each exposed product and for each color and texture specified.
- G. Samples for Verification:
 - 1. For each species and cut of trim, with half of exposed surface finished; 50 sq. in.

1.4 INFORMATIONAL SUBMITTALS

- A. Compliance Certificates:
 - 1. For wood that is not marked with grade stamp.
- B. Sample Warranties: For manufacturer's warranties.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation.
 - 1. Protect materials from weather by covering with waterproof sheeting, securely anchored.
 - 2. Provide for air circulation around stacks and under coverings.

1.6 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.
- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.
 - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or blotchy surface contamination and discoloration.
 - 3. Maximum 15% moisture content in wood.

1.7 WARRANTY

- A. Manufacturer's Warranty for Soffits and Trim: Manufacturer agrees to repair or replace components that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, deformation or deterioration beyond normal weathering.
 - 2. Warranty Period for Factory-Applied Finish: five years from date of Substantial Completion.

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PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with applicable rules of any rules-writing agency certified by the American Lumber Standard Committee's (ALSC) Board of Review. Grade lumber by an agency certified by the ALSC's Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of inspection agency, indicating grade, species, moisture content at time of surfacing, and mill.
 - 2. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by inspection agency.
- B. A material to be maximum density wood.

2.2 EXTERIOR TRIM

- A. Lumber Trim for Painted Finish:
 - 1. Species and Grade: To match existing.
 - 2. Finger Jointing: Not allowed
 - 3. Maximum Moisture Content: 15 percent with at least 85 percent of shipment at 12 percent or less.
 - 4. Provide trim as shown on drawing A307.
- B. Moldings for Painted Finish Made to Match Existing:
 - 1. Species and Grade: To match existing.
 - 2. Finger Jointing: Not allowed
 - 3. Provide trim as shown on drawing A307.
- C. Clapboards:
 - 1. Species and Grade: C Select Grade F.A.S (Quality) Western Red Cedar (*Thuja plicata*), NLGA.
 - 2. Clapboard Size: Custom size to replicate existing clapboard profile and exposure. (See Drawings)
 - 3. Trim Size: As noted on drawings or field verified from existing samples removed from replication. To match existing trim in species and size.
 - 4. Maximum moisture content: 15 percent with at least 85 percent of shipment of 12 percent or less.
 - 5. Lumber Clapboard: Kiln-dried lumber siding complying with DOC PS 20.
 - 6. Surface: 100% Edge Grain.

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2.3 PAINT REMOVAL

- A. Existing Finishes:
 - 1. Exterior: Paint
 - 2. Interior: Paint
 - 3. All Hardware
- B. Paint removal using pH neutral gel products:
 - 1. Multi-strip paint removal pH Neutral gels Manufactured by Sunnyside Corporation, 225 Carpenter Avenue, Wheeling, IL 60090 (800) 323-8611.
 - 2. Smart-Strip Peel Away Paint Removal Gel (must be pH neutral) manufactured by Dumond Chemicals, New York, NY, (609) 655-7700.
 - 3. Prosoco EnviroKlean SafStrip 8 neutral-pH stripping compound, manufactured by Prosoco, Inc., Tel 800-255-4255.
 - 4. Or Approved Equal.
- C. Paint removal using IBIX technology. Acceptance of use of IBIX paint removal pending testing.

2.4 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches into wood substrate.
 - 1. For face-fastening siding, provide ringed-shank siding nails in 316 stainless steel.
 - 2. For applications not otherwise indicated, provide 316 stainless steel fasteners.
- B. Flashing: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim" for flashing materials installed in exterior finish carpentry.
- C. Joint Sealants: Comply with requirements in Section 079200 "Joint Sealants," and recommended by sealant and substrate manufacturers for intended application.
- D. Wood Glue: Waterproof resorcinol glue recommended by manufacturer for exterior carpentry use.
- E. Bird Screening: Stainless steel, Mesh #2 opening Size 0.463" with 86.5% open area.

2.5 FABRICATION

- A. Back out or kerf backs of standing and running trim wider than 5 inches, except members with ends exposed in finished work.
- B. Ease edges of lumber less than 1 inch in nominal thickness to 1/16-inch radius and edges of lumber 1 inch or more in nominal thickness to 1/8-inch radius.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Submit scope of wood repair work for each frame.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Prime lumber and moldings to be painted, including both faces and edges.
 - 1. Cut to required lengths and prime ends.
 - 2. Comply with requirements in Section 099113 "Exterior Painting."

3.3 PAINT REMOVAL

- A. Remove the sash from their frames or openings where appropriate.
- B. Remove all paint using a pH neutral process. Follow manufacturer's instructions and comply with all VOC requirements.
- C. Properly test all wood after paint removal for pH neutrality. A minimum of 5 random core tests will be requested by the Architect during the work, in order to maintain quality control. These tests are to be included as part of the base contract.
- D. Treat wood with a fungicide repellent, if deemed necessary by Architect.

3.4 WOOD REPAIR/DUTCHMAN

- A. Severely rotten, cracked, warped or split wood: Install new wood dutchman spliced in to match profile of member being repaired. Cut back existing wood 1" beyond rot. Spliced repair should be tight and flush with the existing profile and not visible after painting.
- B. Surface wood deterioration: Treat wood with a fungicide.
- C. Loose joints between stiles and rails: Secure loose joints by installing a blind wood dowels. Straighten the sash frame by setting it on a jig and using pipe clamps.

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- D. Sand all surfaces in preparation for repainting.
- E. Install restored sash plumb, level and true to line, without warp to frame or sash. Provide proper support and anchor securely in place.

3.5 INSTALLATION, GENERAL

- A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.
 - 1. Do not use manufactured units with defective surfaces, sizes, or patterns.
- B. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials.
 - 1. Use concealed shims where necessary for alignment.
 - 2. Scribe and cut exterior finish carpentry to fit adjoining work.
 - 3. Refinish and seal cuts as recommended by manufacturer.
 - 4. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining exterior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
 - 5. Coordinate exterior finish carpentry with materials and systems in or adjacent to it.
 - 6. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.

3.6 STANDING AND RUNNING TRIM INSTALLATION

- A. Install flat-grain lumber with bark side exposed to weather.

Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary.

 - 1. Use scarf joints for end-to-end joints.
 - 2. Stagger end joints in adjacent and related members.
- B. Fit exterior joints to exclude water.
 - 1. Cope at returns and miter at corners to produce tight-fitting joints, with full-surface contact throughout length of joint.
 - 2. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.
- C. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.

3.7 ADJUSTING

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

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- B. Adjust joinery for uniform appearance.

3.8 PAINTING

- A. Exterior: Prime and apply two finish coats. See specification 099113.

3.9 CLEANING

- A. Clean exterior finish carpentry on exposed and semi-exposed surfaces. Touch up applied finishes to restore damaged or soiled areas prior to painting. Do not leave any wood surfaces exposed for more than 24 hours in dry weather and never during wet or humid weather.

3.10 PROTECTION

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.
 - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062013

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SECTION 073129 - WOOD SHINGLES AND SHAKES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Western Red cedar shingle fire pressure treated roofing shingles.
 - 2. Installation accessories including underlayment materials, slip sheets, fasteners and other items required for a complete roofing installation.
- B. Related Requirements:
 - 1. Section 061053 "Miscellaneous Rough Carpentry" for wood furring.
 - 2. Section 076200 "Sheet Metal Flashings and Trim" for flashing associated with wood shingles.

1.3 DEFINITIONS

- A. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include manufacturers' product specifications, standard details, dimensions, and general recommendations, as applicable to materials and installation.
- B. Samples: For each product in sizes indicated.
 - 1. Wood Roof Shingles: Full size unit. (3 minimum with Cedar Shake and Shingle Bureau label).
 - 2. Wood Wall Shingles: Full size unit. (3 minimum with Cedar Shake and Shingle Bureau label).

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- C. Shop Drawings: Submit layout drawings showing specific roofing details. All shop drawings require field dimension verification of existing field conditions and dimensions. Contractor must stamp all shop drawing details with the following: *“I, “Insert Contractor Name”, certify that field dimensions have been verified and all details have been prepared and adjusted in accordance to my field verified dimensions.”*
 - 1. Show relationships with adjacent construction and flashing details at roof perimeter, ridges, hips, valleys, dormers and penetrations.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Evaluation Reports: For wood products, from ICC-ES.
- C. Research/Evaluation Reports: Evidence of shingle manufacturer’s and grading agency’s compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
- D. Sample Warranty: For Special warranties specified in this Section.

1.7 CLOSEOUT SUBMITTALS

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

1.8 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 Shingles: Furnish shingles equal to 2 percent of amount installed, but not less than 100 sq. ft. identical to each type, in unbroken bundles.

1.9 QUALITY ASSURANCE

- A. Roofing contractor must have experience in wood shingle roof installation and demonstrate experience in completing at least five wood shingle roof installation projects of similar scope and size in accordance with the Cedar Shake and Shingle Bureau (CSSB) roof installation guidelines. All subcontractors required to submit prequalification forms for review.
- B. Installer Qualifications: Approved by Cedar Shake and Shingle Bureau (CSSB). Roofing contractor must have experience in wood shingle roof installation. All subcontractors required to submit prequalification forms for review.
- C. 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.

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- D. Source Limitations: Obtain shingles through one source from a single manufacturer.
- E. Fire Rating:
 - 1. The shingles are to have a Class B Certi-Guard pressure impregnated, fire retardant treatment,
- F. Mockups: Before installing, construct mockups for each form of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for completed Work.
 - 1. Install a wood shingle installation at eaves with a minimum area of 4 square feet to provide a full mockup of the roof installation to include all materials specified.
 - 2. Locate mockups in accessible location of the size indicated.
 - 3. Notify Architect 7 days in advance of the dates and times when mockups will be constructed. No mockups should be prepared until all shop drawings and material submittals have been accepted.
 - 4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated location protected from weather and moisture according to manufacturer's written instructions. Labels must be intact.
- B. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double stack rolls. Protect from sunlight until installation.
- C. Protect unused roofing materials from weather and moisture when left overnight or when 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.
- E. Retain all necessary labels for fire treatment and shingle CSCB labels to obtain all necessary warranties and to allow architect to verify products are in compliance with specified products.

1.11 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit product installation and related work to be performed according to manufacturer's written instructions and warranty requirements.
 - 1. Install self-adhering sheet underlayment within the range of ambient and substrate temperatures recommended by manufacturer.
- B. Proceed with roofing installation only after substrate construction, vent stacks and other roof

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penetrating work has been completed.

- C. Substrate shall be smooth, dry, securely anchored, and free of construction debris.

1.12 WARRANTY

- A. Special Materials Warranty: Manufacturer's warranty administered by CSSB and on CSSB's standard form in which the 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.
- B. Special Product-Defect Warranty: Submit a written warranty, signed by shake manufacturer, ensuring that shingles, when installed according to manufacturer's written instructions, will remain free of leaks and agreeing to furnish replacement shakes or refund a pro-rata portion of the amount originally paid for the defective shakes due to original product defects, for the specified warranty period.
1. Roof Shingle Warranty Period: 25 years from date of Substantial Completion from Cedar Shingle manufacturer.
 2. Roof Shingle Warranty Period: 30 years for fire retardant treatment. Suppliers and Fire Treatment by Specialists to provide warranty and to work together to achieve warranty periods set out in this specification in accordance with CSSB warranty program.
 3. Wall Shingle Warranty Period: 25 years' warranty against wood rot from date of Substantial Completion from Cedar Shingle manufacturer.
- C. Special Installer's Warranty: Roofing Installer's warranty, on warranty form at end of this Section, signed by Roofing Installer, in which Roofing Installer agrees to repair or replace components of custom-fabricated sheet metal roofing that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Loose parts.
 - c. Wrinkling or buckling.
 - d. Failure to remain weathertight, including uncontrolled water leakage.
 - e. Deterioration of metals, metal finishes, and other materials beyond normal weathering, including non-uniformity of color or finish.
 2. Installer's Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Exterior Fire-Test Exposure: Provide roofing materials identical to those of assemblies tested for fire resistance according to ASTM E 108 or UL 790 by Underwriters Laboratory 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 U1.
 - b. Accelerated Weathering: Subject test specimens to ASTM D 2898 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. Grading Rules: Provide wood products that comply with Cedar Shake & Shingle Bureau's (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.

2.2 PRODUCTS, GENERAL

- A. Grading Standards for Wood Shingles: Comply with the following:
 1. IRC & UBC/CSA Grade Rule & Inspection Label Requirements:
 - i. Sections R905.7.4 (Shingles) ~~R905.8.5 (Shakes)~~ of the international Residential Code (IRC) state that “Wood shingles and shakes shall be of natural durability and copy with the applicable grade rules from the “Cedar Shake and Shingle Bureau” (See attached Grade Rules CSSB 97*). All Shingles ~~and shakes~~ must comply with the grade rule requirements of IRC Tables R905.7.4 (shingles) ~~and 905.8.5 (shakes)~~.
 - ii. NOTE: Shingle grade rules must conform to ~~Uniform~~ International Building code (UBC) 15-4. ~~Shake grade rules must conform to UBC 15-3~~ (IBC) 1507.8.
 2. The ICBO “Acceptance Criteria for Quality Control Agencies for Wood Shake and Shingle Grading” states in:
 - i. SECTION 1.2.3 ICBO ES reference document “Acceptance Criteria for Product Specific Wood Shake and Shingle Roof Systems.”
 - ii. SECTION 2.2.1.2 Product evaluation report number
 - iii. **SECTION 2.2.1.3 Uniform Building Code standard or approved grading rules applicable to the product**
 - iv. SECTION 2.2.1.4 Name, address and telephone number of the mill
 - v. SECTION 2.2.1.5 Name and evaluation report number of the quality control agency.
 - vi. SECTION 2.2.1.6 Grade number for ~~shakes and~~ shingles including hip and ridge units.
 - vii. SECTION 2.2.1.7 Product dimensions (thickness and length)
 - viii. SECTION 2.2.1.8 Coverage and exposure information
 - ix. SECTION 2.2.1.9 Installation instructions must comply with the Uniform

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Building Code or applicable acceptance criteria

- * Re SECTION 2.1: The Cedar Shake and Shingle Bureau labels display the third-party inspection agency on the left-center side of each label. Every label will state “INTERTEK” as the third-party inspection agency (NOTE: See attached “How to Read a CERTI Label”).
- ** Re Section 2.2.1.3: The Cedar Shake and Shingle Bureau display all grading and code conformance (not “...in accordance”) on the right-center side of each label.

- B. Identification: Attach a label to each bundle of shingles; identify manufacturer, references to model code approval, type of product, grade, dimensions, and approved grading agency.
 - 1. Where applicable, include chemical treatment, method of application, purpose of treatment, and warranties available.

2.3 ROOF SHINGLES

- A. Cedar Roof and Wall Shingles: Smooth-sawn Western Red cedar shingles. 100% clear 100% heartwood Red cedar, 100% edge grain with no defects.
 - 1. Grade: No. 1 CSSB Blue Label with starter courses of same.
 - 2. Size: 24 inches long; 1/2” thick at butt.
 - 3. Installed with maximum 7 1/2” exposure (triple lap)
- B. Cedar Ridge Units: Site-fabricated, smooth-sawn Western Red cedar caps for ridges and hips of same thickness as shingles, 7 inches wide; beveled, alternately overlapped, and nailed.
 - 1. Grade: No. 1 CSSB Blue Label.
 - 2. Length: 18 inches and 1/2” thick at butt.
- C. All shingles to have Fire Retardant Treatment: Class-B Certi-Guard pressure impregnated with fire retardant treatment.
- D. Suppliers:
 - i. S&W Forest Products Ltd., Contact: Michael Watkins, 9500-288th Street, Maple Ridge, BC V2W 1L1, Tel (604)462-0045 (800)806-9663 email: michael@swforest.com, website: <http://www.swforest.com>
 - ii. Watkins Sawmills Ltd., Contact: Ed Watkins, P.O. Box 3280, Mission BC V2V 4J4, Tel (604)462-7116 (800)663-8301 email: edw@watkinsawmills.com website: www.watkinsawmills.com
 - iii. Waldrun Forest Products Partnership, Contact: Curtis Walker, 9393-287th Street, Maple Ridge, BC V2W 1L1, Tel (604)462-8266, Fax (604)462-8264 email: sales@waldrun.com website: www.waldrun.com
 - iv. Or Approved Equal.

2.4 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D 226/D 226M, Type II, asphalt-saturated organic felts, non-perforated.

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1. Use as underlayment.

- B. Self-Adhering Underlayment: High-Temperature Sheet: 30 to 40 mils thick minimum, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer. 100% Butyl Based Underlayment.

1. Thermal Stability: Stable after testing at 300 deg F; ASTM D 1970.
2. Low Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.
3. Products:
 - a. GCP Applied Technologies: Grace Ultra (a 100% Butyl based underlayment).
 - b. Protecto Wrap: Jiffy Seal Ice & Water Guard HT Butyl
 - c. Chase Corporation : 4EvaSeal HT Butyl Underlayment
 - d. Or approved equal.

2.5 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- B. Slip Sheet: Rosin-sized paper, 3.0-3.4 lb. nominal weight.
- C. Vent Pipe Flashing: Lead conforming to ASTM B 749, Type L51121, at least 1/16 inch thick, unless otherwise indicated. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof extending at least 4 inches from pipe onto roof.
- D. Air Infiltration Barrier:
 1. Woven polyolefin fabric engineered to be a weather resistant barrier. Thickness: 5 mils nominal.
 2. Basis of Design: Manufacturer Owens Corning. TruWRAP Housewrap, or approved equal.
- E. Roofing Nails: ASTM F 1667, stainless-steel, Type 316 box-type wire ring shank nails, sharp pointed, and of sufficient length to penetrate a minimum of 3/4 inch into sheathing.
- F. Roofing Staples: Not permitted
- G. Felt-Underlayment Nails: stainless-steel Type 316 with 1-inch minimum diameter, low-profile capped heads or disc caps.
 1. Provide with minimum 0.0134-inch- thick cap and with minimum 0.105-inch thick shank of length to penetrate at least 3/4 inch into roof sheathing.

2.6 METAL FLASHING AND TRIM

- A. General: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
- B. Lead-Coated Copper Sheet: ASTM B 101, Temper H00 and H01 32 oz, cold-rolled copper sheet, of weight indicated below, coated both sides with lead weighing not less than 12 lb/100

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sq. ft. nor more than 15 lb/100 sq. ft. of copper sheet (total weight of lead applied equally to both sides).

1. Manufacturers:

- a. Lamb & Ritchie Company, Inc., Tel 888-802-2700
- b. Riverside Sheet Metal, Tel 781-396-0070
- c. Unimet Metal Supply Inc., Tel 973-526-4004
- d. Or approved equal.

- C. Fabricate sheet metal flashing and trim to comply with recommendations in Copper Development Association Manual that apply to design, dimensions, metal, and other characteristics of the item.

2.7 PRESERVATIVE TREATMENT

- A. Provide a continuous 4" exposed Freedom Gray Z-T Alloys exposed zinc strip at ridge to reduce biological growth.

2.8 FIRE TREATMENT SPECIALTIES

- A. To comply with Cedar Shake & Shingles Bureau certified and approved manufacturer and warranty requirements. Fire pressure impregnated system.
 - 1. Must have UL certification for fire retardant.

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/battens to verify that sheathing joints are supported by framing and blocking 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. Replace all rotten and deteriorated deck boards and battens. Record quantities with photographs daily.
- 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 UNDERLAYMENT INSTALLATION

- A. General: Comply with underlayment manufacturer's written installation instructions applicable

to products and applications indicated unless more stringent requirements apply.

- B. Self-Adhering Sheet Underlayment: Install, wrinkle free, on roof deck. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install lapped in direction that sheds water. Lap sides not less than 3-1/2 inches Lap ends not less than 6 inches staggered 24 inches between courses. Roll laps with roller. Cover underlayment within seven days.
 - 1. I-Slope Transitions: Extend 18 inches on each roof slope.

3.3 METAL FLASHING INSTALLATION

- A. General: Install metal flashings and other sheet metal to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
 - 1. Install metal flashings according to recommendations for wood roofing in NRCA's "NRCA Roofing and Waterproofing Manual."
- B. Apron Flashings: Extend lower flange over and beyond each side of downslope wood roofing and up the vertical surface.
- C. Ridges and Edges: Cut and fit shingles at ridges and edges to provide maximum weather protection. Install fasteners at ridges of sufficient length to penetrate sheathing as specified. Maintain minimum widths permitted.
- D. Step Flashings: Install with a head lap of 4 inches and extend both horizontally and vertically. Install with lower edge of flashing just upslope of, and concealed by, butt of overlying shingle. Fasten to roof deck only.
- E. Cricket or Backer Flashings: Install against the roof-penetrating element, extending concealed flange beneath upslope wood roofing and beyond each side.
- F. Open-Valley Flashings: Install centrally in valleys, lapping ends at least 8 inches in direction to shed water. Fasten upper end of each length to roof deck beneath overlap.
 - 1. Secure hemmed flange edges into metal cleats spaced 12 inches apart and fastened to roof deck.
- G. Rake Drip Edges: Install over underlayment and fasten to roof deck.
- H. Eave Drip Edges: Install beneath underlayment and fasten to roof deck.
- I. Pipe Flashings: Form flashing around pipe penetrations and wood roofing. Fasten and seal to wood roofing.

3.4 ROOF-SHINGLE INSTALLATION

- A. General: Install wood-shingle roofing according to manufacturer's written instructions and to recommendations in CSSB's "New Roof Construction Manual" and NRCA's "NRCA Roofing Manual: Steep-Slope Roofing Systems."

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- B. Install wood shingles, beginning at lower end, with a double-layer starter course, projecting shingles 1-1/2 inches beyond fascia, but only 1 inch at gutters. Space adjoining shingles 1/4 apart, attach each shingle with 2 fasteners spaced 3/4 to 1 inch from edge of shingle and 1-1/2 to 2 inches above butt line of subsequent course. Achieve a triple lap installation. Stagger edge joints a minimum of 1-1/2 inches in succeeding courses. Prevent alignment of vertical joints in every third course. Drive fasteners tight to top surface of shingles without crushing wood.
- C. All shingles must be nailed and secured to battens at all times with two nails for each shingle.
- D. Install first course of wood shingles directly over starter course and in continuous straight-line courses across roof deck. Install second and succeeding courses of wood shingles in continuous straight-line courses across roof deck.
 - 1. Extend 1 inch over rake edge, shim at rake to create cant using continuous tapered Red cedar board.
 - 2. Offset joints between shingles in succeeding courses a minimum of 1-1/2 inches. Do not allow alignment of vertical joints in alternate courses.
 - 3. Space shingles a minimum of 1/4 inch and a maximum of 3/8 inch apart.
 - 4. Fasten each shingle with two nails spaced 3/4 to 1 inch from edge of shingle and 1-1/2 to 2 inches above butt line of succeeding course. Drive fasteners flush with top surface of shingles without crushing wood. See drawings for additional requirements.
 - 5. Maintain weather exposure of 7 inches for 24-inch long shingles.
- E. Open Valleys: Cut and fit wood shingles at open valleys, trimming upper concealed corners of shingles. **Maintain uniform width of exposed open valley** from highest to lowest point.

3.5 CLEAN UP

- A. All debris to be removed from inside of the attic. Clean all areas around the building perimeter to include removal of all nails.

3.6 ROOFING INSTALLER'S WARRANTY (TEMPLATE)

- A. WHEREAS <Insert name> of <Insert address>, herein called the "Roofing Installer," has performed roofing and associated work ("the work") on the following project:
 - 1. Owner: <Insert name of Owner>.
 - 2. Address: <Insert address>.
 - 3. Building Name/Type: <Insert information>.
 - 4. Address: <Insert address>.
 - 5. Area of the Work: <Insert information>.
 - 6. Acceptance Date: <Insert date>.
 - 7. Warranty Period: 2 years
 - 8. Expiration Date: <Insert date>.
- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant the work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein

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set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of the work as are necessary to correct faulty and defective work and as are necessary to maintain the work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to the work and other parts of the building, and to building contents, caused by:
 - a. Lightning.
 - b. Peak gust wind speed exceeding 120 mph.
 - c. Fire.
 - d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition.
 - e. Faulty construction of parapet walls, copings, chimneys, vents, equipment supports, and other edge conditions and penetrations of the work.
 - f. Vapor condensation on bottom of roofing.
 - g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
2. When the work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to the work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of the work.
4. During Warranty Period, if Owner allows alteration of the work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of the alterations, but only to the extent the alterations affect the work covered by this Warranty. If Owner engages Roofing Installer to perform the alterations, Warranty shall not become null and void unless Roofing Installer, before starting the alterations, notified Owner in writing, showing reasonable cause for claim, that the alterations would likely damage or deteriorate the work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a use or service more severe than originally specified, this Warranty shall become null and void on date of the change, but only to the extent the change affects the work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect the work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on the work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty

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shall not operate to relieve Roofing Installer of responsibility for performance of the work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

- E. IN WITNESS THEREOF, this instrument has been duly executed this **<Insert day>** day of **<Insert month>**, **<Insert year>**.
1. Authorized Signature: **<Insert signature>**.
 2. Name: **<Insert name>**.
 3. Title: **<Insert title>**.

END OF SECTION 073129

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SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Counter-flashing.
 - 2. Base flashing.
 - 3. Wall flashing.
 - 4. Expansion joints.
 - 5. Downspouts and Straps.
 - 6. Wind locks.
 - 7. Snow Guards.
 - 8. Ridge Cap Flashing.
 - 9. Miscellaneous accessories.
- B. Related Requirements:
 - 1. Section 040403 – “Historic Masonry Restoration”.
 - 2. Section 061053 "Miscellaneous Rough Carpentry".
 - 3. Section 073129 – “Wood Shingles and Shakes”.
 - 4. Section 076100- “Sheet Metal Roofing”
 - 5. Section 099113 – “Exterior Painting”

1.3 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 leak proof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 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.

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3. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 1. Include including manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated products.
- B. Shop Drawings: For sheet metal flashing and trim. Copying Architects Drawings is not permitted. All shop drawings require field dimension verification of existing field conditions and dimensions. Contractor must stamp all shop drawing details with the following: "I, *Insert Contractor Name*", *certify that field dimensions have been verified and all details have been prepared and adjusted in accordance to my field verified dimensions.*"
 1. Include plans, elevations, sections, and attachment details.
 2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
 3. Include identification of material, thickness, weight, and finish for each item and location in Project.
 4. Include details for forming, including profiles, shapes, seams, and dimensions.
 5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
 6. Include details of termination points and assemblies.
 7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
 8. Include details of roof-penetration flashing.
 9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counter flashings as applicable.
 10. Include details of special conditions.
 11. Include details of connections to adjoining work.
 12. Scale:
 - a. Layout drawings: Scale 1/4-inch per foot.
 - b. Detail drawings: Scale half size, minimum.
- C. Samples/ Mock Up:
 1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
 2. Sample 12" square of sheet metal flashing in specified weights.
 3. Submit one mock up or sample of each of the following:
 - a. Downspout, strap and attachments. 1' length sample
 - b. Step base flashing and counter flashing at Chimney. Mock up
 - c. Step base, counter and apron flashing at stucco wall. Mock up
 - d. Soldered Seam mock up 2' long.
 - e. Drain basket. Sample
 - f. Ridge Comb Flashing. Mock up
 - g. Snow guard. One sample
 - h. All Fasteners.

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1.6 INFORMATIONAL SUBMITTALS

- A. Installer Qualifications: Engage an experienced Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance; with experience performing similar work with historic buildings; and with sufficient production capacity to produce required fabrications without delaying the Work. A subcontractor prequalification form is required for this trade.
- B. Quality Standard for Materials and Workmanship: Fabricate and install sheet metal flashing and trim work in accordance with Copper Development Association (CDA), "Copper in Architecture Handbook." Note: Manual must be retained on site at all times.
- C. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Fabricator Qualifications: 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. Mockups: 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 a typical roof shingle mock up with all associated flashing details including hip, valley, ridge and eaves to be constructed full size at grade for review by Architect. Approximately 10 feet 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 Architect specifically approves such deviations.

1.9 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. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- 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.
- C. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.
- D. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated

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covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall 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 shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change: 120 deg F ambient; 180 deg F material surfaces.

2.2 SHEET METALS

- A. Lead-Coated Copper Sheet: ASTM B 101, Temper H00 and H01, cold-rolled copper sheet of weight indicated below, coated both sides with lead weighing not less than 12 lb/100 sq. ft. or more than 15 lb/100 sq. ft. of copper sheet (total weight of lead applied equally to both sides).
 - 1. Manufacturers:
 - a. Lamb & Ritchie Company, Inc., Tel 888-802-2700
 - b. Riverside Sheet Metal, Tel 781-396-0070
 - c. Unimet Metal Supply Inc., Tel 973-526-4004
 - d. Or approved equal.
- B. Zinc Sheet: Zinc: 99 percent pure, alloyed with 0.08 to 1.00 percent copper. Applied as strips as noted on drawings to allow act as biocide and prevent bio growth on shingles.

2.3 REGLETS

- A. General: Lead coated copper sheet units of type and profile indicated, formed to provide secure interlocking of separate reglet and counter-flashing pieces. Use lead bar to secure counter flashing see drawings for details.
 - 1. Surface mounted types shall not be permitted.

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2.4 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; non-perforated.
- B. Self-Adhering, High-Temperature Sheet: 30 to 40 mils thick minimum, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 - 1. Thermal Stability: Stable after testing at 240 deg F; ASTM D 1970.
 - 2. Low Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.
 - 3. Products:
 - a. GCP Applied Technologies: Grace Ultra.
 - b. Protecto Wrap : Jiffy Seal Ice & Water Guard HT Butyl.
 - c. Chase Corporation : 4EvaSeal HT Butyl Underlayment
 - d. Or approved equal.
- C. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.5 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of solder and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.
- B. Fasteners: Self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
 - 1. Nails for Roofing: Series 316 stainless steel, 0.109 inch minimum and not less than 7/8 inch long, barbed with large head.
 - 2. Exposed Fasteners: NOT PERMITTED
 - 3. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed; with hex-washer heads must be in Stainless Steel 316.
 - 4. Blind Fasteners: Rivets NOT PERMITTED
- C. Solder for Lead Coated Copper: ASTM B 32, Grade Sn60, 60 percent tin and 40 percent lead unless otherwise recommended by Sheet Metal flashing manufacturer. No other metal are acceptable.
- D. Flux: For Lead Coated Copper:
 - 1. Products:
 - a. Superior Ruby Fluid Soldering Flux. Manufacturer: Superior Flux & Mfg. Co., 6615 Parkland Blvd., Cleveland, OH 44139, Tel 440-349-3000, Fax 440-349-0003, info@superiorflux.com.
 - b. Premium Soldering Flux for Copper 851E. Manufacturer: Guilbert Express, 60 Broad Street, Ste. 3502, New York, NY 10004, Tel 708-667-7729, E-Fax 866-404-2607.
 - c. Jel-Flux Flux. Manufacturer: HCC Holdings, Inc., 4700 West 160th, Cleveland, OH 44135, Tel 800-321-9532, Fax 800-321-9535
 - d. Or approved equal.

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- E. Elastomeric Joint Sealant: ASTM C 920, of base polymer, type, grade, class, and use classifications required to produce joints in sheet metal roofing that will remain weathertight and as recommended by roll-formed sheet metal roofing manufacturer for installation indicated.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application. Proposed locations to be reviewed with Architect.
- H. Asphalt Mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil dry film thickness per coat.
- I. Mastic Sealant: Polyisobutylene; nonhardening, nonshrinking, nondrying, nonmigrating sealant.
- J. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
- K. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work; size and thickness required for performance.
 - 1. Fabricate components from passive stainless steel sheet, unless otherwise indicated.
- L. Rivets: Rivets are **NOT** permitted.

2.6 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 1. 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.
 - 2. Obtain field measurements for accurate fit before shop fabrication.
 - 3. 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.
 - 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."
- D. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

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1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
 2. Use lapped expansion joints only where indicated on Drawings.
- E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- H. Fabricate exposed lead coated copper work true to line and levels indicated, without oil-canning, buckling, and tool marks, and with exposed edges folded back to form 3/4" wide hems.
- I. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be soldered, form seams, and solder. Pre-tin seams and cleats to be placed in the seams. Rivet joints for additional strength only where noted on drawings. Lock and lap seams in direction of flow of water drainage.
- J. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- K. Do not use graphite pencils to mark metal surfaces.

2.7 ROOF-DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch long sections. Furnish flat-stock gutter brackets and twisted gutter spacer bars and straps fabricated from Stainless Steel, of dimension indicated on Drawings. Fabricate expansion joints, expansion-joint covers with diverter and gutter Stainless Steel reinforcing bars and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.

2.8 SHEET METAL FABRICATIONS

- A. General: Fabricate sheet metal items from lead coated copper in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.
- B. Counterflashing: 20 ounces per square foot.
- C. Base Flashing: 20 ounces per square foot.
- D. Wall Flashing: 20 ounces per square foot.
- E. Flashing Receivers: 20 ounces per square foot.
- F. Expansion Joints: 20 ounces per square foot.
- G. Ridge & Hip Flashing: 20 ounces per square foot.

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- H. Downspouts: 16 ounces per square foot.
 - 1. Size: 6-inch minimum diameter smooth round with a 1" wide loose lock expansion seam at back. Custom made. See drawings.
 - 2. Straps: 1-1/2 inch wide. Minimum of 3 per downspout. Use 32 ounce LCC straps minimum.
- I. Exposed trim: 20 ounces per square foot.
- J. Wind Locks: 32 ounces per square foot.
- K. Downspout Scuppers or Sleeves: 20 ounces per square foot.
- L. Miscellaneous Accessories: 20 ounces per square foot.

2.7 SNOWGUARDS:

- A. Snow Guard Pads: Fabricated units designed to be attached by hooking over the battens without penetrating the cedar shingles.
 - 1. Products:
 - a. Alpine Snow Guards, a division of Vermont Slate & Copper Services, Inc. #PD11 custom size pad-style snow guard, powder coated aluminum.
Hook thickness = 1 7/8".
Strap Length = 15 9/16" to be verified.
 - b. Rocky Mountain Snow Guards, Inc. #ST 18 Snow Guard, powder coated aluminum.
 - c. Snow Gem, Half Carat Metal Snow Guard with Tab, powder coated aluminum.
 - d. Or approved equal.
 - 2. Finish/material: Exterior powder coated aluminum. Color to be selected from standard range available from Ral Tyger Drylac to match cedar shake color.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, 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 sheathing or backing substrate to prevent air infiltration or water penetration.
 - 4. All deteriorated deck roof boards and battens must be replaced prior to installation of sheet metal flashing.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

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3.2 UNDERLAYMENT INSTALLATION

- A. Where installation is to be directly on wood substrates, install a slip-sheet of red rosin paper on a course of asphalt saturated felt.
- B. Where installation is to be directly on water and ice underlayment, install a slip-sheet of red rosin paper to prevent contact.

3.3 INSTALLATION, GENERAL

- A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and with CDA "Copper in Architecture Handbook."
- B. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement as required to complete sheet metal flashing and trim system.
 - 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 - 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 - 3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
 - 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 - 5. Torch cutting of sheet metal flashing and trim is not permitted.
 - 6. Do not use graphite pencils to mark metal surfaces.
- C. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
- D. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
 - 1. Form expansion joints of intermeshing hooked flanges.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- E. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- F. 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.

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- G. Seal joints as required for watertight construction. Bed flanges of work in a thick coat of roofing cement where required for waterproof performance. Locations must be submitted on shop drawings and reviewed prior to installation.
- H. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches however, reduce pre-tinning where pre-tinned surface would show in completed Work.
 - 1. Do not use torches for soldering.
 - 2. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
 - 3. Lead Coated Copper Soldering: Tin edges of uncoated sheets, using solder for copper.

3.4 ROOF-DRAINAGE SYSTEM INSTALLATION

- A. General: Install drainage items fabricated from lead coated copper, with straps, adhesives, and anchors recommended by CDA to drain roof in the most efficient manner. Coordinate roof-drain flashing installation with roof-drainage system installation. Coordinate flashing and sheet metal items for steep-sloped roofs with roofing installation.
- B. Hanging Gutters: Join sections with soldered joints. Provide for thermal expansion by installing expansion joints as noted on drawings. Attach gutters at eave or fascia to firmly anchor them in position. Provide end closures and seal watertight with sealant. Slope to downspouts.
 - 1. Fasten gutter spacers to front and back of gutter.
 - 2. Anchor and loosely lock back edge of gutter to continuous cleat.
 - 3. Anchor back of gutter that extends onto roof deck with cleats spaced as noted on drawings
 - 4. Anchor gutter with gutter brackets and twisted straps spaced not more than 36 inches on center and secured to roof deck as noted on drawings
 - 5. Install gutter with expansion joints at locations indicated, but not exceeding, Install expansion-joint caps with diverters. See drawing details.
 - 6. Install downspout baskets to maintain downspouts clear of debris
- C. Downspouts: Join sections with 1-1/2-inch telescoping joints.
 - 1. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and not to exceed 8'-0" spacing with minimum of 3 per downspout. Straps to be located at same locations on each downspout.
 - 2. Provide elbows at base of downspout to direct water away from building. Maximum elbow angle 45 degrees in direction of water travel.
 - 3. Connect downspouts to underground drainage system as noted on drawings.
 - 4. Attach to walls with passive stainless steel fasteners.
 - 5. Install baskets at each drain.
- D. Splash Pans: Install where downspouts discharge on Set in elastomeric sealant compatible with the substrate.
- E. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch below discharge.
- F. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration

indicated. Lap joints minimum of 4 inches in direction of water flow.

3.5 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements sheet metal manufacturer's written installation instructions and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous wind lock anchored to substrate at 3-inch on center.
- C. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.
- D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets and fit tightly to base flashing. Extend counterflashing 6 inches over base flashing. Lap counterflashing joints minimum of 6 inches. Secure in waterproof manner by means of lead wedges and interlocking folded seams as indicated on drawings.
- E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.

3.6 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

3.7 MISCELLANEOUS FLASHING INSTALLATION

- A. Secure all flashings with 2" wide cleats 12" o.c. unless otherwise indicated. Secure each cleat with a minimum of two passive stainless steel fasteners.
- B. Attachments: All attachments to be stainless steel.

3.8 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- B. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerances

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specified in MCA's "Guide Specification for Residential Metal Roofing."

3.9 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Apply clear coating where shingles drain onto flashing.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- E. 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.

END OF SECTION 076200

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SECTION 092400 –STUCCO RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Scope of work includes:
 - a. Patch stucco at chimneys 01 and 02.
 - b. New stucco on chimney 03.
- B. Related sections: 099000 – Painting

1.2 SUBMITTALS

- A. General: Submit manufacturer's product data and installation instructions for systems specified, demonstrating compliance with requirements.
- B. Material certificates: Submit producer's certification that each kind of building material complies with specified requirements.
- C. Shop Drawings: Show locations and installation of control and expansion joints, including plans, elevations, sections, details of components, and attachments to other work.
- D. Material Testing: Contractor is responsible for submitting the material test reports from the material conservator.
- E. Samples:
 - 1. Carefully remove at least 3 stucco samples (3" x 3" min.) of the exterior stucco from locations indicated by the Architect. As directed by architect, provide temporary materials at locations from which samples are taken.
 - 2. Submit at least six 12" square samples of the exterior stucco replicating the existing color, finish, and texture mounted on plywood or hardwood.
 - 3. Mockup: Prepare at least two field samples in locations selected by the architect. To establish the acceptable limits and variations in material and workmanship for each type of stucco condition. Do not commence work without architect acceptance of the mock up. Minimum sizes 4' x 4'. One mock up must be applied over new concrete substrate and one over concrete masonry units.
 - 4. Samples for verification: A bagged and labeled sample of each component. Identify sources, both supplier and quarry.

1.3 QUALITY ASSURANCE

- A. Restoration specialist: The mason must have a experience on historic structures of this type. An experienced supervisor will be required full time on site.
- B. Conservator: The mason must hire an architectural conservator with experience in mortar and stucco replication to analyze and replicate the stucco.
- C. Use a manufacturer regularly engaged in producing stucco materials.
- D. Quality Control Program: Prepare a written quality- control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials

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and tools without damaging masonry. Include provisions for supervising worker performance and preventing damage.

- E. Following the installation of new stuccos the contractor must warranty for 1 year after completion of the work that all cracks that appear will be repaired.

1.4 PROJECT CONDITIONS

- A. Environmental requirements: Comply with provisions of ASTM C842 and recommendations of cement stucco manufacturer for environmental conditions before, during and after application of stucco.

- B. Protect sills, ledges, projects, and all surfaces from mortar droppings.

- C. Use all means necessary to protect the materials of this section before, during and after installation and to protect the work and material of other trades, the building, and the public.

- D. Cold weather requirements:

1. When ambient outdoor temperatures are below 55° F maintain continuous, uniform temperature of no less than 55°F for not less than one week prior to beginning stucco installation, and for no less than one week after completion of stuccoing.
2. Avoid heat sources in immediate vicinity of stucco, and conditions under which uneven heating could occur.

- E. Warm weather requirements:

1. Protect stucco against uneven and excessive evaporation of moisture and from strong flows of dry air, both natural and artificial.
2. Apply and cure stucco as required by climatic and job conditions to prevent drying out during curing period.

Prevent premature drying of stucco using any of the following:

1. Moist curing.
2. Barriers to deflect sunlight and wind.
3. Proprietary curing compounds.

- F. Ventilation: Provide natural or mechanical ventilation to remove excessive moisture from the time stuccoing is started until it is completely dry and cured.

1. Do not use air blowers on stucco surfaces.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Product Handling: Deliver all products to job in original container with seals unbroken and use without reducing.

- B. Materials Storage: Protect all products from freezing and store above ground.

- C. Store all materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

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1.6 MATERIALS TESTING

- A. The contractor must obtain verification of compatibility of existing stuccos and proposed new stuccos in written form from the stucco manufacturers. This must be done prior to proceeding with mock-ups.
- B. Contractor must allow for conservator to test and replicate existing stucco samples.

PART 2 - PRODUCTS

2.1 STUCCO

- A. Stucco repairs:
 - 1. Repairing and restoration: The system will be a two-coat stucco system and includes a scratch coat and finish coat.
- B. Patching repairs to existing damaged/cracked, stucco, to use the two-coat system described above.

2.2 STUCCO MATERIALS: BASIS OF DESIGN

- A. Binder: Portland Cement ASTM C 150 White Portland cement.
- B. Sand aggregate: ASTM C 897: Aggregate for job mixed Portland Cement Based Plasters
 - 1. Assume at least 2 sands to be used for stucco mix.
 - 2. Sand Suppliers:
 - a. George Schofield Co., Inc., 831 E Main St, Bridgewater, NJ 08807, Tel 732-356-0858
 - b. Better Materials Corp., Swamp Road & Route 232, Penns Park, PA 01894, Tel 215-598-3152
 - c. Hanson Aggregates PA, Inc., Montoursville Sand Plane, 5245 Lycoming Mall Drive, Montoursville, PA 17754, Tel 570-368-2481
 - d. Or approved equal.
- C. Other sands may have to be used. The contractor should allow for the preparation of at least 10 mockups.
- D. Water: Clean, potable and free of oils, alkalis, acids and organic matter.
- E. No color additives permitted.

2.3 MORTAR MIXING

- A. General: Do not use add-mixtures of any kind in stucco, unless otherwise indicated.
- B. Measure all materials in dry condition by volume.
- C. Thoroughly mix dry material prior to adding water.
- D. Stucco ratio mixes to be decided by conservator.

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2.4 STUCCO ATTACHMENT METHOD

- A. The stucco will be applied as per method recommended by the conservator.

2.5 STUCCO FINISH

- A. Finish stucco texture to match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine all existing field conditions prior to commencing the work. Verify that material is sound. Contractor is to provide access for the architect and structural engineer to verify the condition of the walls. Do not proceed with any work until drawings locating the scope of the work have been provided by the architect.

3.2 STUCCO APPLICATION

- A. Apply stucco in the following thickness recommended by conservator to be field verified by the Contractor:

Note: Additional coats may be required to allow for alignment with existing stucco.

- B. Apply each coat to the next prior to setting of previous coat. At the end of the workday seal completed work to prevent drying out. Float from right to left and finish from left to right.
- C. Apply and work finish coat to match approved mock up and existing stucco finish.
 - 1. Coordinate stucco application with installation of adjacent work to avoid soiling and damage of stucco and other work.
 - 2. Comply with ASTM C926 for two coat – cement plaster on solid base.
- D. Tolerances: Deviation from the plain not to exceed 1/8" in 10'-0" as measured with a straight edge at any location on the surface.
- E. Cure stucco by maintaining in a damp condition for not less the 72 hours.
- F. Install movement joints in accordance with drawings.
- G. Curing:
 - 1. When ambient relative humidity will be below 75% during non-work hours, moist cure the set and hardened base coat plaster at the end of the workday by spraying a fine mist of water over the entire surface. Repeat application of a fine mist of water morning and evening until plaster has been in place 24-48 hours. Alternatively, coverage of the base coat plaster with plastic membrane unit application of subsequent coat or finish coat plaster is permitted.
 - 2. When ambient relative humidity will be above 75% during non-work hours, neither water

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spraying nor coverage with plastic membrane is required.

3.3 STUCCO PATCHING

- A. Cut back stucco as per details to insure appropriate attachment.
- B. For all small patches build up as necessary with the two coat system. The number of coats will depend on the depth of the patch.
- C. Apply the bonding agents to all edges of existing stucco prior to patching.
- D. Wall tolerance described under stucco application also apply to all patches.

3.4 FINAL CLEANING

- A. After stucco has fully hardened, thoroughly clean exposed surfaces using a damp rag, in preparation for finish. Damp rag with water only.
- B. Do not use metal scrapers or alkali cleaning agents.
- C. Dispose of all debris resulting from cleaning and stucco operations.

END OF SECTION 092400

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SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on existing exterior surfaces including:
 - 1. Touch up Painting of Wood Trim
 - 2. Touch up painting of Stucco Walls
 - 3. Painting of new stucco
 - 4. Painting of new LCC counter flashing to match stucco walls
 - 5. Painting of cast iron boots.
- B. Related Requirements:
 - 1. Section 050383 – “Historic Cast Iron Repair”.
 - 2. Section 062013 – “Exterior Finish Carpentry”.
 - 3. Section 076200 – “Sheet Metal Flashing and Trim”.
 - 4. Section 092400 – “Cement Stucco Restoration”.
- C. Paint or stain exposed surfaces, as noted.
- D. Do not paint pre-finished items such as glass, finished metal surfaces, operating parts, and labels.
- E. Assume all painted surfaces to have all paint removed prior to repainting.
- F. All paint must cure for at least ten days before exposed to inclement weather.

1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
 - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
 - 3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
 - 4. Semi-gloss refers to medium-sheen finish with a gloss range between 30 and 65 when

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- measured at a 60-degree meter.
5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.4 SUBMITTALS

- A. Product Data: For each paint system specified. Include block fillers and primers.
 1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
 3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
- B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.
 1. After color selection, the Architect will furnish color chips for surfaces to be coated.
- C. Samples for Verification: Of each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.
 1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
 2. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.
 3. Submit Samples on the following substrates for the Architect's review of color and texture only:
 - a. Painted Wood: Provide two 12-inch square samples of each color and material on hardboard.
- D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra material from the same product run that match products installed and that are in unopened factory-sealed containers for storage and identified with labels describing contents.
 1. Paint: 5 percent, but not less than 2 gal of each material and color applied.

1.6 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record

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of successful in-service performance.

- B. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.
- C. Paint Removal Sample and Surface Preparation Sample: Contractor to provide at least four paint removal samples and surface preparation samples for review by architect prior to commencing any work. The location and size of samples are to be selected by the Architect.
- D. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
 - 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
 - b. Final approval of colors will be from job-applied samples.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. 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. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Manufacturer's stock number and date of manufacture.
 - 4. Contents by volume, for pigment and vehicle constituents.
 - 5. Thinning instructions.
 - 6. Application instructions.
 - 7. Color name and number.
 - 8. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg. F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 - 1. Protect from freezing. Keep storage area neat and orderly. Remove soiled rags and

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waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

2. Comply with all municipal safety storage requirements.

1.8 FIELD CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F.
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F.
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in the Exterior Painting Schedule for the paint category indicated.
- B. Products: Subject to compliance with requirements, provide one of the products in the paint schedules.
- C. Manufacturers Name: The following manufacturers are referred to in the paint schedules by use of shortened versions of their names, which are shown in parentheses:
 1. Basis of Design: Benjamin Moore & Co. (Moore)
 2. Dunn Edwards Paints (Dunn)
 3. Sherwin-Williams (Williams)
 4. Tnemec Company Inc. (Tnemec)
 5. Or approved equal.

2.2 PAINT REMOVAL PRODUCTS

- A. Existing Finishes:
 1. Paint
- B. Paint removal using pH neutral gel products:

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1. Multi-strip paint removal pH Neutral gels manufactured by Sunnyside Corporation, 225 Carpenter Avenue, Wheeling, IL 60090 (800) 323-8611.
2. Smart-Strip Peel Away Paint Removal Gel (must be pH neutral) manufactured by Dumond Chemicals, New York, NY, (609) 655-7700.
3. Prosoco EnviroKlean SafStrip 8 neutral-pH stripping compound, manufactured by Prosoco, Inc., Tel 800-255-4255.
4. Or approved equal.

- C. Steel Wool
- D. Turpentine or boiled linseed oil
- E. Water: Potable
- F. Plastic scrapers
- G. Fungicide
- H. Natural bristle brushes
- I. Sandpaper

2.3 PAINT, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."
- B. Material Compatibility:
 1. Materials for use within each paint system shall be 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, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
 3. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 - a. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- C. Colors: To be determined by Owner & Architect. Basis of Design: Match Existing.
- D. Finish/Sheen: To be determined by Owner & Architect. Basis of Design: Match Existing.

2.4 SOURCE QUALITY CONTROL

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- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 2. Testing agency will perform tests for compliance with product requirements.
 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

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 the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Wood: 15 percent.
 2. Portland Cement Plaster: 12 percent.
- C. Portland Cement Plaster Substrates: Verify that plaster is fully cured.
- D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces 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 hardware, covers, plates, and similar items already in place that are removable and 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.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease,

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and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Metal Substrates: Remove grease and oil residue from sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- E. CastIron: Abrasively blast or mechanically abrade to remove all existing layers and corrosion. Provide a sound metal surface.
- F. Wood Substrates:
1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
 2. Sand surfaces that will be exposed to view, and dust off.
 3. Prime edges, ends, faces, undersides, and backsides of wood.
 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- G. Remove all loose paint in compliance with Lead Safe Practices.
- H. All existing wood surfaces are to be sanded smooth.
- I. Protect all exposed wood from moisture by priming immediately.
- J. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
- (a) Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 - (b) Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 - (c) Use only thinners approved by paint manufacturer and only within recommended limits.
 - (d) Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
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.
 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.

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4. Paint entire exposed surface of window frames and sashes.
 5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint undercoats same color as topcoat but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. 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.
- E. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
- (a) The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 - (b) Omit primer on metal surfaces that have been shop primed and touchup painted.
 - (c) If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 - (d) Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- F. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
- (a) Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
 - (b) Rollers: Not permitted without consultation with Architect.
 - (c) Spray Equipment: Not permitted on site.
 - (d) Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
 - (e) Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to

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- ensure a finish coat with no burn through or other defects due to insufficient sealing.
- (f) Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- (g) Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

- A. The owner reserves the right to invoke the following test procedure at any time and as often as the owner deems necessary during the period when paint is being applied.
- B. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.
- C. The Owner may direct the Contractor to stop painting if test results show material being used does not comply with specified requirements. The Contractor shall remove non-complying paint from the site, pay for testing, and repaint surfaces previously coated with the rejected paint. If necessary, the Contractor may be required to remove rejected paint from previously painted surfaces if, on repainting with specified paint, the 2 coatings 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.

3.6 EXTERIOR PAINTING SCHEDULE

- A. Exterior Wood Trim
 - 1. Prime Coat: Exterior, alkyd wood primer applied at spreading rate recommended by the

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manufacturer to achieve a total dry film thickness of not less than 1.5 mils.

- a. Moore: Fresh Start Exterior Wood Primer 094
 - b. Dunn: Block - It Premium
 - c. Williams: A-100 Exterior Fast Dry Stain Blocking Alkyd Wood Primer
 - d. Or approved equal
 - e. Tint primer for all dark colors, per manufacturer
2. First and Second Coat: High-gloss, exterior, latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils per coat.
 - a. Moore: Ultra Spec Ext Gloss Finish N449
 - b. Dunn: Versagloss Interior/Exterior Latex Gloss Paint
 - c. Williams: Super Paint Exterior Acrylic Latex Gloss
 - d. Or approved equal
 - e. Color: Match existing paint color. Basis of design: Benjamin Moore Benjamin Moore #141 Citrus Mist.

Note: Finish to match existing trim, adjustments may be required.

B. Exterior Stucco

1. Prime Coat: Exterior, alkyd primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
 - a. Moore: Ultra Spec High Hiding Masonry Primer 609
 - b. Dunn: Ultra-Grip Premium
 - c. Williams: Multi-Purpose Interior/Exterior Latex Primer/Sealer
 - d. Or approved equal
 - e. Tint primer for all dark colors, per manufacturer
2. First and Second Coat: Low-Lustre, exterior, latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils per coat.
 - a. Moore: Regal Select Moorgard (103) low luster finish
 - b. Dunn: Evershield Eggshell
 - c. Williams: A-100 Exterior Acrylic Latex Low-Sheen
 - d. Or approved equal
 - e. Color: Match existing paint color. Basis of design: Benjamin Moore Benjamin Moore #141 Citrus Mist.

C. Lead Coated Copper Flashing

1. Prime Coat: Exterior, alkyd primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
 - a. Moore: Fresh Start High-Hiding All Purpose Primer 046
 - b. Dunn: Ultra-Grip Premium
 - c. Williams: Multi-Purpose Interior/Exterior Latex Primer/Sealer
 - d. Or approved equal
 - e. Tint primer for all dark colors, per manufacturer
2. First and Second Coat: Low-Lustre, exterior, latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils per coat.
 - a. Moore: Ultra Spec Ext Low Lustre Finish N455
 - b. Dunn: Evershield Eggshell
 - c. Williams: A-100 Exterior Acrylic Latex Low-Sheen
 - d. Or approved equal

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- e. Color: Match existing paint color. Basis of design: Benjamin Moore #141 Citrus Mist.

- D. Cast Iron Downspout boots
 - 1. Primer: Tnemec N69 Primer
 - 2. Middle Coat: Tnemec 73 Endurashield
 - 3. Finish/ top Coat: Tnemec 1071 Fluronar
 - 4. Manufacturer: Tnemec Paint, www.tnemec.com or approved equal.
 - 5. Color: to be selected by Architect:

LEAD SAFE PRACTICES

- I. *Lead Safe Practices* are safe ways of working with leaded paint. Lead safe practices are used as part of activities when paint will be disturbed as part of the work.
- II. Lead Safe Practices have the following goals:
 - 1. To minimize dust during construction activity.
 - 2. To clean the work areas using lead specific cleaning methods.
 - 3. To keep the painted surfaces of the construction area intact. Intact leaded paint is not a lead hazard.
- III. This section is intended to provide the minimum requirements for lead-safe work practices.
- IV. Prohibited activities. When disturbing paint in the construction area do not:
 - 1. Dry scrape painted surfaces.
 - 2. Dry sand painted surfaces.
 - 3. Use a high temperature heat gun or open flame to remove paint.
 - 4. Use a grinder to remove paint.
 - 5. Use painters' masks, as they do not protect one from lead dust.
 - 6. Power-wash the construction area as this can spread lead paint chips into the surrounding ground area.
 - 7. Open flame burning.
 - 8. Power sanding without HEPA dust collection.
 - 9. Sand blasting.
- V. Lead safe practices require the following:
 - 1. Wet scraping of paint (use a spray bottle with water to pre-wet the surface).
 - 2. Wet sand the surface (use a spray bottle with water to pre-wet the surface).
 - 3. Use plastic sheeting to seal off area outside the construction area.
 - 4. Use plastic sheeting to seal furnace vents.
 - 5. Use a standard garden hose to wet down large areas before scraping/sanding.
 - 6. Use drop cloths to catch paint chips and throw the paint chips in the trash.
 - 7. Do not let children or pregnant women in the work areas until cleaned.
 - 8. Use a HEPA filtered vacuum to clean the work area. Due to the requirement to work in wet areas, all electric circuits must be protected by GFCI with integral test buttons.
 - 9. Maintain all paint not to be disturbed in an intact condition.
 - 10. Instruct all workers in these lead safe practices.
 - 11. Limited access to minimize the spread of lead dust by only allowing trained workers and

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- supervisors to enter a work area until it has undergone specialized lead dust cleaning.
- 12. Use HEPA filtered sanding/grinding equipment.
- 13. Wash work clothes separately from the other clothing.
- VI. Exterior work area protection. Secure a 6 mil. polyethylene sheet to the horizontal ground plane (flooring or grade) 6 ft. minimum out from the work area. At the end of a task mist, remove and dispose of plastic.
- VII. Worker protection. To minimize the potential for worker exposure to lead dust, the following activities are never permitted in any work area:
 - 1. No eating.
 - 2. No drinking.
 - 3. No chewing gum or tobacco.
 - 4. No smoking.
 - 5. No applying cosmetics.
- VIII. Conclusion of activity. After completion of lead activities, and removal of containment, the following cleaning procedures must be followed:
 - 1. Reposition all exterior furnishings. HEPA vacuum all visible surfaces including clothing, furniture, walls, floors, windowsills, window troughs, etc. Wet wipe all surfaces with detergent and rinse. After surface is dry, HEPA vacuum all visible surfaces.

REFER TO THE INFORMATION BELOW FOR IMPORTANT BACKGROUND INFORMATION IN WHY LEAD REQUIRES SPECIAL HANDLING.

Lead is a naturally occurring, heavy, gray metal. When absorbed into the body, lead can have highly toxic effects. Lead exposure affects all the systems in the body. A small amount of lead exposure does more damage to children than adults. Lead can damage a child under 6 years old physically, behaviorally, and mentally. Once a child has been exposed to lead, the effects of exposure cannot be reversed.

Physical damage caused by lead exposure includes, but is not limited to, central nervous system problems, headaches, stomachaches, joint pains, and sleep disorders. Behavioral damage caused by lead exposure includes, but is not limited to, short attention span, irritability, aggressive and violent behavior, and hyperactivity. Mental damage caused by lead exposure includes, but is not limited to, lowered IQ points, lowered reading scores in school, and learning disabilities.

The only way to know if a child has been lead poisoned is to have a blood test performed by your physician. Once a child has been poisoned the damage cannot be reversed, but you can stop further damage from happening.

Lead has been used extensively in the United States for several centuries. As a result lead can be found in paint, soil, water, air and food. The most common way children are exposed to lead is through lead dust. The leaded dust comes from lead-based paint. Lead-based paint becomes a hazard and causes lead dust when the paint is in poor condition, is painted on friction or impact surfaces, and or is disturbed during a renovation.

Lead-based paint chips and dust then mix with household dust and build up in window troughs, on floors, and flat surfaces. Children are put at risk when lead in paint chips and dust gets on their hands and toys, which they may put in their mouths. If paint is kept intact and surfaces are kept clean,

CEDAR ROOF REPLACEMENT – INDIAN KING TAVERN
HADDONFIELD, CAMDEN COUNTY, NEW JERSEY
DPMC NO. P1260-00

November 17, 2022
Final Design

children can live safely in a home painted with lead-based paint. Homes built before 1940 have a 98% chance of containing lead-based paint. Homes built before 1960 have a 70% chance of containing lead based paint. Homes built before 1978 have a 20% chance of containing lead-based paint. Homes built after 1978 are unlikely to contain lead-based paint. Homes built before 1950 also used paint that had higher concentrations of lead. Paint kept in good condition that remains undisturbed is not a hazard.

Lead-based paint is usually not a hazard if it is in good condition. Children are most commonly exposed to lead poisoning through lead in household dust caused by lead-based paint in the following situations:

- a. In poorly maintained, older houses, lead-based paint, which may be several layers down, flakes and peels off and creates lead dust. Paint failure is usually caused by moisture problems.
- b. On friction or impact surfaces. For example, windows painted with lead-based paint rub (friction) together when the window is opened and closed, releasing lead dust. When a door painted with lead-based paint closes (impact) on a doorstep, the impact damages the paint and releases lead dust.
- c. On chewable surfaces, such as, windows and windowsills, doors and door frames, stairs railings, banisters, and porches. The lead in the paint gets directly into a child's mouth.

Uncontrolled or uncontained dust and debris from repainting and/or renovation that disturbs lead-based paint in a well-maintained home can also expose children to unsafe lead levels.

Lead-based paint chips and dust then mix with household dust and build up in window troughs, on floors, and flat surfaces. Children are endangered when lead in paint chips and dust gets on their hands and toys, which they may put in their mouths. If paint is kept intact and surfaces are kept clean, children can live safely in a home painted with lead-based paint.

The second most common way that children are exposed to lead is through soil. Soil around the buildings may have old lead-based paint chips from the exterior paint or lead from previous leaded gasoline deposits. Sanding and power washing can cause fine particles of lead-based paint to deposit in the soil. Children then play in the dirt and are at risk of ingesting lead or tracking lead into their homes on their shoes. Exposure can be decreased by covering bare soil with grass, sod, wood chips, concrete, or asphalt, or by making bare soil inaccessible to children.

Additional sources of lead exposure to children include water, parents whose jobs or hobbies expose them to lead, leaded crystal, lead soldered cans, lead glazed ceramics, and some home remedies or foreign cosmetics.

END OF SECTION 099113