

SECTION 049150 - MASONRY POINTING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. General: Provide all labor, materials, equipment, and services required for pointing of the exterior masonry on the Abbott Memorial Library. Provide all labor, materials, equipment and services required for pointing the library as indicated on the Drawings, as specified herein, and as may be required by conditions and authorities.

- B. Masonry pointing includes, but is not limited to the following:
 - 1. Repointing of the exterior walls.
 - 2. Prepare all joints in brick, granite and terracotta masonry for pointing as specified.
 - 3. Install new mortar in joints, tool joints, and clean excess mortar from all masonry surfaces.
 - a. Assume average depth of mortar joints to be 1-1/2" depth.
 - 4. Install new lead t-caps in sealant bed at all skyward facing joints.
 - 5. Install sealant in masonry to wood joints and masonry to metal flashings, and clean excess sealant from masonry surfaces.
 - 6. Where stone unit or masonry joint collapses during cutting for re-pointing, remove masonry and reset.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 042000 – Unit Masonry

- B. Section 045250 – New Terracotta

1.3 QUALITY ASSURANCE

- A. Restoration Specialist: Contractor that performs masonry pointing shall be regularly engaged in pointing masonry on historic buildings. Contractor shall demonstrate to Owner's satisfaction that, within previous five (5) years, he has successfully performed and completed in a timely manner at least three (3) projects similar in scope and type to required work involving buildings designated as Landmarks by local governmental authorities, or buildings listed on the National Register of Historic Places or on a State Register of Historic Places.
 - 1. Subcontractors: Subcontractors are bound by the same requirements as Contractor. No subcontractors shall be employed unless approved in writing by Architect.
 - 2. Foreman: Masonry pointing shall be directly supervised by a full-time foreman with experience equal to or greater than that required of Restoration. Foreman shall be on site daily for duration of work of this section. Same foreman shall remain on project throughout work unless performance is deemed unacceptable.

3. Mechanics: Masonry pointing shall be carried out by a steady crew of skilled mechanics who are thoroughly experienced with materials and methods specified. Contractor shall certify that mechanics employed for work of this section fully understand project requirements.
- B. Testing of Workers: All technicians proposed for use on project will be required to successfully complete six (6) linear feet of cutting and raking of mortar joints, and six (6) linear feet of installation and tooling of new mortar in presence of Architect prior to working on project. One one-quarter inch chip of masonry per linear yard will be standard of acceptable skill. Unsuccessful performance in this test area will be grounds for rejection of technician.
- C. The work of all masonry sections shall comply with the United States Department of Interior *Secretary of the Interior Standards for Rehabilitation of Historic Buildings*.
- D. Source of Materials: Obtain materials for masonry pointing from a single source for each type of material required to ensure a match in quality, color and texture.
- E. Field Supervised Construction: Contractor shall notify Architect before beginning masonry pointing work and arrange for on-site testing.
- F. Contract Drawings: Drawings are two-dimensional representations of three-dimensional profiles and do not necessarily show all surfaces. Perform work on surfaces of projections, reveals, ornament, and other elements associated with areas on which work is indicated.
- G. Familiarity with Site Conditions: Bidders shall visit the site prior to bid and carefully examine project scope and conditions that may affect proper execution of work of this section and determine or verify dimensions and quantities.
- H. Repair or replace in-kind all masonry units damaged during masonry pointing to Architect's satisfaction at no additional cost to Owner.

1.4 SUBMITTALS

- A. General: Submit the following in compliance with requirements of Conditions of the Contract and Division 1 specification sections. Revise and resubmit each item as required to obtain approval of Architect.
- B. Qualification Data: Submit qualification data for firm and personnel specified in "Quality Assurance" article that demonstrates both firm and personnel have capabilities and experience complying with requirements specified. For firm and foreman, provide a list of three (3) completed projects similar in size and scope to work required of this project. For each project list project name, address, architect or conservator, supervising preservation agency and scope of contractor's work. Submit this information with the Bid.
- C. Samples:
 1. Mortar: Samples of all mortar required for work of this section
 2. Sealant: Samples of all sealant required for work of this section.

- D. Product Literature: Manufacturer's published technical data for each product to be used in work of this section including recommendations for application and use. Include test reports and certificates verifying that product complies with specified requirements.
- E. Prepare quality control panels (mock-ups) as specified.

1.5 QUALITY CONTROL PANELS

- A. General: Before beginning general masonry pointing work, prepare quality control panels to provide standards for work of this section. Do not proceed with masonry pointing until Architect has approved relevant quality control panel.
 - 1. Locate quality control panels in locations as approved by Architect.
 - 2. Provide 72 hours notice to Architect prior to start of each quality control panel.
 - 3. Perform quality control panels using crew that will be executing the work and following requirements of this section.
 - 4. Allow each quality control panel to stand until mortar is thoroughly dry and has reached its natural color (72 hours). Notify Architect that panel is ready for inspection.
 - 5. Repeat quality control panels as necessary to obtain Architect's approval.
 - 6. Protect approved quality control panels to ensure that they are without damage, deterioration, or alteration at time of Substantial Completion.
 - 7. Approved quality control panels in undamaged condition at time of Substantial Completion may be incorporated in the work.
 - 8. Approved quality control panels will represent minimum acceptable standard for masonry pointing work. Subsequent work that does not meet standard of approved quality control panels will be rejected.
- B. Prepare the following Quality Control Panels:
 - 1. Joint Preparation in Brick Masonry: One (1) panel including at least eight (8) linear feet of joint (horizontal and vertical).
 - 2. Joint Preparation in Terracotta Masonry: One (1) panel including at least eight (8) linear feet of joint (horizontal and vertical).
 - 3. Joint Pointing in Brick Masonry: One (1) panel including at least eight (8) linear feet of joint (horizontal and vertical).
 - 4. Joint Pointing in Terracotta Masonry: One (1) panel including at least eight (8) linear feet of joint (horizontal and vertical).
 - 5. Installation of new lead T-Caps at Terracotta Window Hood.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver materials to site until they have been approved by Architect.
- B. Deliver and store materials in manufacturer's original sealed containers or packaging, clearly labeled with manufacturer's name, address, and product identification, including grade, type and color. Immediately reseal containers after partial use.

- C. Store all materials in spaces designated by Owner. Such spaces shall comply with pertinent federal, state and local laws, codes, and regulations and shall be locked and inaccessible to those not employed under this section.
 - 1. Maintain temperatures in storage spaces within range recommended by manufacturer of material being stored in each case. Protect liquid components from freezing.
 - 2. Store products and materials at least 4 in. above floor and protect them from water, dampness or high humidity.
- D. Deliver, store and handle products and materials to prevent damage, deterioration, or degradation and intrusion of foreign material.
- E. Discard and remove from site deteriorated or contaminated materials and products that have exceeded their expiration dates. Replace with fresh materials.

1.7 PROJECT CONDITIONS

- A. Applicable Regulations: Perform work of this section following applicable federal, state, and local laws and regulations.
- B. Safety: Provide measures necessary to protect all persons, whether or not involved with work of this section, from risk or harm caused by work of this section.
- C. Protection of Building and Property:
 - 1. Protect adjacent elements and materials from damage or deterioration during work of this section. Provide necessary protection and procedures to protect masonry not being pointed and all other elements and materials.
 - 2. Repair damage to elements and materials caused by masonry pointing work, using mechanics experienced in respective type of work, to satisfaction of Architect at no additional cost to Owner.
 - 3. Protect components of storm drainage systems against damage and blockage caused or accelerated by work of this section.
 - 4. Protection from Weather: Protect exposed areas of building, including areas of masonry from which mortar has been removed, from penetration by wind, water or other forces at times when work is not in progress. Cover openings when work is not in progress.
- D. Protection of Environment: Provide precautions necessary to protect site, site features, surrounding building, streets and sidewalks, air, water, and other elements of environment from damage or deterioration caused by work of this section.
- E. Dust: Minimize dissemination of dust to greatest extent possible.
 - 1. Provide dust collection hoods for all cutting tools connected to a vacuum collection system, or other comparable method.
 - 2. Contractor shall hold Owner, Architect and their consultants harmless from all claims relating to dust resulting from work of this section.
- F. Protection of Masonry: Protect existing masonry from damage during work of this section. Take special care in removing existing mortar to ensure that no masonry is damaged, chipped, or

broken. Contractor shall replace or repair any masonry unit damaged in any manner by work of this section as directed by and to satisfaction of Architect at no additional cost to Owner.

- G. Staining: Prevent mortar from staining face of masonry to be left exposed. Protect, sills, ledges and projections from mortar droppings. Immediately remove mortar in contact with such masonry. Protect base of walls from rain splashed mud and mortar splatter by means of coverings spread on ground and over wall surface.
- H. Protection from Rain: Protect pointed joints with heavy waterproof sheeting from direct attack by rain or other precipitation for at least 24 hours after mortar has been applied.
- I. Coordination: Coordinate work of this section with work of other Division 4 sections to ensure proper completion of masonry work.
- J. Access for Inspection and Approvals: Provide Architect on a regular basis to all location on which quality control panels are being carried out, on which work is ongoing, and where work has been completed to allow for inspections and approvals. Provide means of access safety precautions required to facilitate inspections and approvals.

1.8 ENVIRONMENTAL CONDITIONS

- A. Use of Materials: Use materials only under the following conditions unless more stringent conditions are specified by product manufacturer. The most stringent conditions shall govern.
 - 1. Cement and Lime Mortars: Prepare and use only when substrate and ambient air temperatures are between 40 degrees Fahrenheit and 90 degrees Fahrenheit. Protect installed mortar by approved methods when exposed to sunlight and when temperatures are above 80 degrees Fahrenheit.
- B. Cold Weather Masonry Construction: do not proceed with masonry construction when masonry temperature or ambient air temperature is below 40 degrees Fahrenheit or when ambient air temperature is expected to drop below 40 degrees Fahrenheit within 72 hours of use of mortar.
 - 1. Remove all masonry work determined by Architect to have been damaged by freezing conditions and rebuild following requirements of these specification at no additional cost to Owner.
- C. Hot Weather Masonry Construction: Protect work during hot weather (ambient air temperature above 80 degrees Fahrenheit, direct sunlight, or windy conditions) from premature drying or too rapid curing by use of dampened fabric coverings or other Architect approved methods.

PART 2 - PRODUCTS

2.0 TOOLS

- A. Hand Tools: Chisels, hammers, and mallets.

1. Thickness of Chisels: Chisels used to remove mortar from and to otherwise prepare joints shall have a maximum thickness of 5/8 times joint width extending back from tip of chisel minimum of two (2) times depth at which chisel will be inserted into joint.
 2. Special Tools: Provide special knives or special thin cutter blades for use in joints less than 1/8" wide.
- B. Power Tools: Mortar joints are very slim. **Power tools will likely not be allowed**, unless it can be demonstrated that grinders can be used without damaging masonry units. Small, hand-held electric grinders with diamond or abrasive blades no greater than 3/32 in. thick and maximum of 4" in diameter may potentially be used to cut horizontal joints only under certain conditions as described in Part 3, below, and if specifically approved by Architect.
- C. Brushes: Stiff, natural bristle brushes.
- D. Trowels for Pointing: Long, thin trowels that are narrower than joint being pointed.
1. Fabricate special trowels for pointing if necessary to provide for proper insertion and compaction of mortar.
- 2.1 RESTORATION MORTAR
- A. Follow requirements of Section 041050 – Restoration Mortars. Mortar shall match original mortar in cleaned masonry in color, texture, and other visual qualities to satisfaction of Architect.
- 2.2 SEALANT
- A. Follow requirements of Section 079000 – Sealants
- 2.3 LEAD T-CAPS
- A. New lead t-caps manufactured by Weathercap, Inc., P.O. Box 1776, Slidell, LA 70459, (985) 649-4000. Selected, sized and installed per manufacturer's written instructions.

PART 3 - EXECUTION

- 3.1 GENERAL PREPARATION
- A. Examine areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of work. Do not proceed until unsatisfactory conditions have been corrected.
- B. Before using power grinders or hand methods that generate airborne dust, erect dust impervious barriers to prevent escape of dust. Take all other necessary measures to prevent dust from traveling beyond work area.

3.2 JOINT PREPARATION

- A. Remove mortar from joints to a depth of 1 in. or to sound mortar, whichever is greater. In all cases remove all weathered and loose material.
- B. Take all necessary precautions to ensure that faces and arrises of masonry units are not damaged in any way during joint preparation.
- C. Joint preparation shall cease if, in judgement of Architect Contractor's methods are damaging masonry units. Work shall not resume until tools, workmen, and methodology are corrected to meet standard of approved quality control panel.
- D. Remove all mortar from surfaces of masonry units adjoining joint to allow new mortar to bond directly with masonry units. Surface at rear of joint shall be uniform and roughly perpendicular to sides of joint.
 - 1. Where existing caulk is to be removed at masonry to masonry joints, mechanically abrade surface of masonry units adjoining joint to remove all traces of existing caulk from surface pores in order to allow new mortar to bond directly with masonry units.
- E. Mortar Removal:
 - 1. Hand tools: Use hand tools for removal of mortar from joints less than 6" long and from all other joints in which use of power tools might cause damage to masonry units. Use hand tools to complete mortar removal from joints where power tools have been used to partially remove mortar.
 - a. Sharpen chisels hourly to minimize chipping.
 - 2. Power tools: With specific prior approval from Architect and following successful demonstration of skill by mechanics, power grinders may be used to partially remove mortar from horizontal joints in masonry and from joints longer than 6 in. where there is no danger of cutting into adjacent masonry units.
 - a. Demonstrated Ability of Mechanics: Prior to beginning work, demonstrate that all workmen using power tools are proficient in use of power tools for joint preparation. Failure to demonstrate to satisfaction of Architect that power tool joint preparation does not result in damage to masonry to remain shall result in prohibition of use of power tools for joint preparation. If proficiency is not demonstrated, or if work in progress results in damage to masonry to remain, all power tool work shall cease, and joints shall be prepared using hand tools.
 - b. Limitations on Use of Power Tools:
 - 1) Do not use power grinders on joints less than 3/16 in. wide or less than 6 in. long or where projections, ornament, or other surface irregularity might make damage to masonry units likely.
 - 2) Use power grinder only to score on kerf in center of each joint to depth of mortar removal required. Remove remaining mortar using hand tools.
 - 3) Stop kerf at least 4 in. from inside corners and projecting elements. Remove remaining mortar using hand tools.
 - 4) Contractor may construct jigs to guide power tools and to prevent damage to adjacent masonry.

- F. Cleaning: Remove loose mortar and foreign material from raked joints using fine, stiff natural bristle brushes. Remove remaining particles, dust and dirt using filtered, oil-free compressed air. Ensure that dust and dirt are not blown back into joints that have previously been cleaned.
- G. Repair or replace masonry units damaged during joint preparation process to satisfaction of Architect at no additional cost to Owner.

3.3 MORTAR APPLICATION FOR STONE TO STONE JOINTS

- A. Wetting: Thoroughly wet masonry 24 hours prior to and again immediately before pointing. Let surfaces dry slightly. At time of pointing, surfaces should be damp, so they do not rapidly absorb moisture, but free of standing water.
- B. Pointing: Point joints as follows:
 - 1. Joints 1 in. Deep: Using a long, thin pointing trowel, tightly pack mortar into joints in layers not exceeding 1/4 in. thick to match original sound joints.
 - 2. Joints Deeper than 1 in.: Begin by filling areas from which mortar is missing to a depth greater than 1" in 1" thick layers to within 1" of wall surface to provide a uniform substrate for final pointing. Fill final 1" depth continuously and uniformly in 1/4" thick layers.
 - 3. Firmly iron each layer to compact mortar to ensure a full bond between mortar and masonry and a firm, solid joint.
 - 4. Allow each layer to reach thumbprint hardness before applying succeeding layer. Do not let previous layer dry out before applying succeeding layer. Construct uniform joints.
 - 5. Do not spread mortar over edges onto exposed surfaces of masonry units. Do not featheredge mortar.
 - 6. When stopping work at end of each day or for other reasons, stagger layers of mortar so there will be no through joints in pointing. Stagger joints in layers so that they are at least 3 in. from each other.
 - 7. Where on day's work joins that of the previous day, dampen previous work to ensure a good bond.
- C. Joint Tooling
 - 1. Tooling: After final layer of mortar is "leather hard", tool joints with a flat rule jointer, or as directed by Architect.
 - 2. Profile: Tool joints to profile approved by Architect. Solidly compress mortar so that it adheres well to masonry on both sides and forms a dense surface. Premature or late tooling will result in unacceptable finishes that will be rejected.
 - 3. Duplicate the finish of a slightly weathered joint by brushing newly pointed joints with a non-metallic natural fiber bristle brush to produce a slight texture.
- D. Curing
 - 1. Keep newly pointed joints damp for at least 48 hours after mortar has been inserted. Do not apply a direct stream of water to joints for at least 24 hours after mortar has been placed.

2. Ensure masonry temperature remains as required by specifications until mortar is thoroughly cured.
- E. Cleaning and Repair of Mortar Joints
1. Water Washing: Wash pointed masonry with clean filtered water and non-abrasive hand tools to remove mortar debris from masonry surfaces.
 - a. Wash within 48 hours following completion of pointing.
 - b. Use blunt-edged wood scrapers, stiff natural bristle brushes, and rough towels along with water to remove mortar debris. Do not use wire brushes.
 2. Repair of Pointed Joints: As cleaning progresses, examine joints to locate cracks, holes, and other defects. Carefully point up and fill such defects with restoration mortar. Where necessary in the opinion of Architect, cut out joints and refill with pointing mortar exercising extreme care to ensure that color matches that of original pointing mortar work. Exposed joint surfaces shall be free from protruding mortar, holes, pits, depressions, and other defects.
- F. Lead T-Caps
1. Select, size and install lead t-caps as per "Weathercap's" written instructions. Contractor will be required to size joints specified to receive t-caps to determine appropriate stock item for each application. Mask exposed stone adjacent to new t-cap with tape to prevent sealant from touching stone.

3.4 CORRECTIVE MEASURES

- A. Should a crack occur in a joint surface or should mortar separate from masonry unit, cut out mortar and repoint following requirements of this section to satisfaction of Architect.
- B. Should Architect determine that any masonry pointing work does not equal or exceed minimum standard established by approved quality control panel, cut out mortar and repoint following requirements of this section to Architect's satisfaction.

END OF SECTION 049150