

SECTION 041050 - RESTORATION MORTARS

PART 1- GENERAL

1.01 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.02 SCOPE OF WORK

- A. General: Provide all labor, materials, equipment, and services required for restoration mortars for Abbott Memorial Library in Dexter, Maine, as indicated on the Drawings, as specified herein, and as may be required by conditions and authorities.
- B. Restoration Mortar includes, but is not limited to, the following:
 - 1. Provide custom mortar for re-pointing existing granite masonry to match existing original mortar in granite masonry in color. New mortar will have a well graded aggregate range.
 - 2. Provide custom mortar for re-pointing existing brick masonry to match existing original mortar in brick masonry in composition. New mortar will have a well graded aggregate range.
 - 3. Provide custom patching mortar for minor repair of granite masonry matching granite in color, texture, light reflectance, and other physical properties.
 - 4. Provide custom patching mortar for minor repair of brick masonry matching brick in color, texture, light reflectance, and other physical properties.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Removing and Replacing Brick - Section 042110
- B. Masonry Pointing – Section 049150.

1.04 QUALITY ASSURANCE

- A. **Restoration Specialist:** Contractor that performs restoration mortars work shall be regularly engaged in preparation of mortars to match historic mortars. 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 same requirements as Contractor. No

subcontractors shall be employed unless approved in writing by Architect.

2. Foreman: Mortar preparation shall be directly supervised by a full-time foreman with experience equal to or greater than that required of Restoration Specialist. Foreman shall be on site daily for duration of work of this Section. Same foreman shall remain on project throughout work unless his performance is deemed unacceptable.
 3. Mechanics: Mortar preparation shall be carried out by a steady crew of skilled mechanics who are thoroughly experienced with materials and methods specified, have a minimum of one (1) year experience with work on historic buildings similar to that required by this Section, and are familiar with design requirements. Contractor shall certify that mechanics employed for work of this Section fully understand project requirements. In acceptance or rejection of work of this Section, no allowance will be made for workers' incompetence or lack of skill.
- B. The work of all masonry sections shall comply with the United States Department of the Interior Secretary of the Interior Standards for Rehabilitation of Historic Buildings.
- C. Source of Materials: Obtain mortar ingredients from a single source for each type of material required to ensure uniform quality, color, and texture.
- D. Field Supervised Construction: Notify Architect before beginning mortar preparation.

1.05 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 that demonstrates that both firm and personnel have capabilities and experience complying with requirements specified. For firm and foreman, provide a list of at least three (3) completed projects within the New England Region similar in size and scope to work required on this project. For each project list project name, address, architect, conservator, supervising preservation agency, scope of contractor's work, and other specified information. This information shall be submitted with the bid.
- C. Program of Work: Written program and schedule for restoration work specified in 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. Samples:
1. Pointing Mortar: Cured mortar samples set in 1/2 in. by 6 in. plastic or aluminum

channels for approval of color and texture. Samples shall be matched to original mortar as identified by Architect or CPM. Provide the following:

- a. Mortar for granite masonry. (Three (3) samples)
 - b. Mortar for brick and terracotta masonry. (Three (3) samples)
2. Sand for Pointing Mortars: One-pound sample of each type of sand proposed for use in pointing mortars. Include sieve analysis.
 3. Grout for Filling Wall Cavities: Fresh grout sample for approval of texture and moisture content.
 - a. Multiple samples may be required to obtain proper quality, including substitution of alternate aggregates, as determined on site by Architect or CPM.
- F. Mortar samples must be approved in writing by Architect.

1.06 PRODUCT 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 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, except Owner's Representatives.
 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.

1.07 PROJECT CONDITIONS

- A. Applicable Regulations: Perform work of this Section in accordance with federal, state, and local laws and regulations.
- B. Material Safety: Chemical materials shall be safe in use and shall comply with applicable federal, state, and local laws and regulations.

- C. Prohibited Materials: No masonry cements or masonry mortars will be permitted.
- D. Coordination: Coordinate preparation of mortars with work of Division 4 sections requiring mortars to ensure proper completion of Work.

1.08 ENVIRONMENTAL CONDITIONS

- A. General: Perform work only when temperature of products being used and air temperature and humidity comply with manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.
 - 1. Remove all masonry work determined by Architect or CPM to have been damaged by freezing conditions and replace following these specifications to Architect and CPM's satisfaction.
- B. Proprietary Materials: Do not use proprietary patching materials and mortars unless temperatures are between 50 degrees Fahrenheit and 80 degrees Fahrenheit and will remain within that range for at least 48 hours after work has been completed unless work at other temperatures is specifically approved by manufacturer and Architect or CPM.
- C. Mortars: Do not mix or use mortars when air or masonry temperature is below 40 degrees Fahrenheit or when it is expected to drop below 40 degrees Fahrenheit within 48 hours of mortar application.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Grade and Quality: Materials shall conform to requirements of this Section and shall be new, free from defects, and of recent manufacture.
- B. Ready-Mixed Products: Wherever a ready-mixed product is specified for use, containers shall bear labels giving exact formula of mixture. Manufacturer shall guarantee formula, and product shall be subject to chemical analysis by laboratory selected by Architect or Architect's Masonry Restoration Consultant at Contractor's expense.
- C. Manufacturer's Instructions: Comply with material manufacturer's instructions for use of products (including surface preparation, mixing, applying, drying, etc.). In case of conflict with requirements of this Section, the more stringent requirements shall govern.
- D. ASTM Standards: Materials shall comply with relevant ASTM standards.

2.02 PRODUCTS

- A. White Portland Cement: Type I, ASTM C 150.
- B. Portland Cement: Type I or Type II, ASTM C 150, non-staining. Do not use masonry cement.

- C. Hydrated Lime: ASTM C 207, Type S.
- D. Sand: Clean sharp sand, free of loam, silt, soluble salts, organic matter, and other deleterious substances and graded in compliance with ASTM C 144, except that for joints less than 3/16" all aggregate shall pass through a number 16 sieve.
 - 1. Sand for Pointing Mortar: Sand shall match sand in existing original mortar in size and color with no or minimum addition of pigment. New aggregate shall be well graded with a Particle Distribution approximating the following:

Particle Distribution

| Sieve Screen # | Mesh Size Inches | Weight (grams) | % Retained |
|----------------|------------------|----------------|------------|
| 16 | .048 | .565g | 8% |
| 30 | .0215 | 1.87g | 26% |
| 60 | .0092 | 4.10g | 57% |
| 100 | .006 | .51g | 7% |
| Pan | Fines | .142 | 2% |

- E. Water: Potable, clean and free of substances deleterious to mortar and masonry.
- F. Composite Patching Mortars: Two-component, latex-modified cementitious compounds, specifically manufactured for masonry restoration. Provide one of the following:
 - 1. Custom System 45, available from Edison Chemical Systems, Inc., 25 Grant Street, Waterbury, CT 06704, (203) 597-9727. Provide custom colors to match color of cleaned existing masonry units being reinforced.
 - 2. Jahn M160, available from Cathedral Stone Products, Inc., 8332 Bristol Court, #107, Jessup, MD 20794 (800) 684-0901.
 - 3. Mortar Bed Less Than 3/8" Thick: Laticrete 4237 for "thin-set" mortars.
 - 4. Mortar Bed 3/8" or Greater in Thickness: Laticrete 3701 for "thick-set" mortars.
- G. No additives or admixtures other than those specified shall be used. No chlorides or aggressive corrosive chemicals shall be used.

2.03 MORTAR MIXES

- A. Mortar for Setting and Pointing **Granite** Masonry: Mortar specified hereinafter shall comply with ASTM C 270, "Standard Specification for Mortar for Unit Masonry." Type "N" Mortar strength, in general, shall be consistent with a low standard deviation, and a 28 day cube compressive strength of a minimum of 1800 psi and a maximum of 2000 psi. Mortar mixes may change and may require adjustment before and during construction in accordance with pre-construction conformance testing, field testing, and evaluation

thereof by Architect or CPM.

1. **Type "N" Mortar** for Pointing Granite Masonry:

- a. 1 part by volume white Portland cement (Type I).
- b. 1 part by volume hydrated lime (Type S).
- c. 6 parts sand (Selected to blend with granite masonry).

B. Mortar for Pointing **Brick** Masonry and **Terracotta**: Mortar specified hereinafter shall comply with ASTM C 270, "Standard Specification for Mortar for Unit Masonry." Type "N" Mortar strength, in general, shall be consistent with allow standard deviation, and a 28 day cube compressive strength of a minimum of 750 psi and a maximum of 1799 psi. Mortar mixes may change and may require adjustment before and during construction in accordance with pre-construction conformance testing, field testing, and evaluation thereof by Architect or CPM.

1. **Type "N" Mortar** for Setting and Pointing Brick and Terracotta Masonry:

- a. 2 part by volume white Portland cement (Type I).
- b. 1 part by volume hydrated lime (Type S).
- c. 9 parts by volume sand (selected to match original).
- d. oxide pigments as needed to match original mortar color. Pigment shall not exceed a ratio of 10% by weight of the cementitious ingredients.

2.04 MIXING OF MORTAR

- A. Measure mortar ingredients carefully so that proportions are controlled and maintained throughout all work periods.
- B. Mix mortar in an approved type of power operated batch mixer. Mix for time required to produce a homogeneous plastic mortar but not less than five minutes: approximately two minutes for mixing dry materials and not less than three minutes for mixing after water has been added.
- C. Use minimum amount of water to produce a workable consistency for mortar's intended purpose.
 1. Mortar for Pointing: As dry a consistency as will produce a mortar sufficiently plastic to be worked into joints.
 2. Mortar for Grouting: Consistency as will readily flow in cracks and voids.
- D. After mixing, mortars for pointing or setting shall sit for 20 minutes prior to use to allow for initial shrinkage. Mortar shall be placed in final position within two (2) hours of mixing. Re-tempering of partially hardened material is not permitted.
- E. Mortar for grout shall be placed in final position within two (2) hours of mixing. Re-tempering of partially hardened material is not permitted.

- F. Custom Patching Mortars: Mix in strict accordance with manufacturer's written instructions.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation of Restoration Mortars shall be performed as part of the work of the following Sections:

1. Removing and Replacing Brick – Section 042110.
2. Masonry Pointing – Section 049150.

END OF SECTION 041050

SECTION 042000 – UNIT MASONRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Brick.
- B. Reinforcement and Anchorages.
- C. Flashings.
- D. Accessories.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 04 53 00 - Masonry Pointing

1.3 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- B. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip; 1999 (Reapproved 2009).
- C. ASTM A580/A580M - Standard Specification for Stainless Steel Wire; 2012a.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated by the Hot-Dip Process; 2011.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.
- F. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile; 2012.
- G. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).
- H. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2012.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation Meeting: Convene a pre-installation meeting one week before starting work of this section; require attendance by all installers.

1.5 SUBMITTALS

- A. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, masonry accessories, and reinforcing bars.
- B. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.
- C. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

- A. Fire Rated Assemblies: Conform to applicable code for requirements for fire rated masonry construction.

1.7 MOCK-UP

- A. Construct a masonry wall as a mock-up panel sized 2 feet long by 2 feet high; include mortar and accessories and backup in mock-up.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.9 FIELD CONDITIONS

- A. Maintain materials and surrounding air temperature to minimum 36 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.1 BRICK UNITS

- A. Manufacturers:
 - 1. Morin Brick - Modular Mayo Blend A, 09-44, Made at Sugarcreek Plant 8.
 - 2. Substitutions: See section 01 60 00 - Product requirements.
- B. Facing Brick: ASTM C216, Grade SW.
 - 1. Color and texture to match Architect's sample.
 - 3. Nominal Size: 11-3/4" x 1-5/8" x 3-5/8"

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.

3.2 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.3 COURSING AND BOND

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Match existing brick bond pattern.

3.4 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- C. Remove excess mortar and mortar smears as work progresses.
- D. Interlock intersections and external corners.
- E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

3.5 MASONRY FLASHINGS

- A. Install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
 - 1. Extend flashings full width at such interruptions and at least 4 inches into adjacent masonry or turn up at least 4 inches to form watertight pan at non-masonry construction.
 - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.
- C. Lap end joints of flashings at least 4 inches and seal watertight with mastic or elastic sealant.

3.6 TOLERANCES

- A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- B. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- C. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

3.7 CUTTING AND FITTING

- A. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.8 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00.
- B. Clay Masonry Unit Tests: Test each variety of clay masonry in accordance with ASTM C67 requirements, sampling 5 randomly chosen units for each 50,000 installed.
- C. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140 for conformance to requirements of this specification.
- D. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.9 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.

3.10 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

042110 - REMOVING AND REPLACING DETERIORATED BRICK MASONRY

PART 1--GENERAL

1.01 SUMMARY

A. This procedure includes guidance on removing and replacing deteriorated brick masonry.

1.02 PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Do not proceed with brick replacement under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation; Proceed with the work only when forecasted weather conditions are favorable for proper cure.
2. Wet Weather: Do not apply or mix mortar on outside surfaces with standing water or outside during rain.
3. Cold Weather construction is not allowed. Cold weather is considered to occur when surface temperature of masonry is below 40 F. or air temperature is predicted to be below 40 F. within 48 hours. See #6 below.
4. Hot Weather: The surface temperature of the work, not the ambient temperature, should not be higher than 100 F.; Mortar mixing should be done only in the shade; Cover mortar with water-misted burlap in hot weather to reduce evaporation; Pointing work should be done in the shade; Work around the building during the day so that the fresh work will be shielded from direct sunlight to reduce evaporation rate. High temperatures can cause flash setting of cements and rapid evaporation of water in the mix, leading to lack of development of final strength by the cement.
5. All materials must be kept above 40 F.
6. Special Precautions and Notes: Do not allow masonry to freeze until mortar is thoroughly dry and hardening almost complete (approx. three days time); The setting of lime mortar is very much slower than that of cement mortar because the curing requires the absorption of carbon dioxide to form hard lime carbonates; It is a very lengthy process, so do not expect it to become hard immediately, especially at the core of large masses of masonry.

PART 2---PRODUCTS

2.01 MATERIALS

Salvage Brick: Approved by Architect, sound, crack free, clean brick without face chips larger than 1/2 inch, salvaged from removal of removed face brick work of same type or from off site. Salvage Brick from off-site shall match existing in dimension, texture, profile, firing characteristics, composition and hardness.

- B. Nylon dowels: Threaded rods, ½ inch diameter, 13 threads per inch.
- C. Epoxy: PolyPlus SF by Helifix, or Engineer-Approved Equivalent.

2.02 EQUIPMENT

- A. Trowel
- B. Joint tools
- C. Chisel
- D. Hawk
- E. Hammer
- F. Stiff bristle brushes
- G. Use of Electric Grinders and other power tools is prohibited with the exception of the Trow & Holden pneumatic tool system or Architect-Approved equivalent. Masons may use grinders or power tools if they can demonstrate fine skill and handling of power tools on a mock-up area for the Architect to inspect. Power tools must be used on a limited basis, with frequent breaks, to eliminate worker fatigue and decrease opportunity for damaging brick. **Horizontal joints may be cut with power saws and diamond blades only when specifically permitted by Architect based on results of mock-ups required to be performed and only under the following additional conditions:****
 - 1. Only horizontal joints may be cut with power tools; no head joints may be cut in this manner.
 - 2. Power equipment may be used only to score one cut in each joint at the center of the joint; the cut shall be no more than one-half the width of the joint and cut to the full depth required.
 - 3. Final cutting-out of the joints shall be performed with hand tools only; do not use power tools for finish work.

PART 3---EXECUTION

3.01 EXAMINATION

- A. Deterioration of brick due to moisture is evident as spalling, erosion, cracking, peeling paint, and deteriorated mortar joints.

3.02 PREPARATION

A. Surface Preparation:

1. Wet brick having absorption rates greater than 0.025 oz. per sq. inch per minute.
 - a. On the flat side of a brick, deposit water on an area approximately the size of a 25 cent coin.
 - b. If the water disappears in less than 30 seconds, wet the bricks.
2. Absorptive brick should be thoroughly soaked in the pile each afternoon prior to the day they are to be used.
3. Cover the bricks with tarps or heavy paper to prevent evaporation.
4. Wet brick as necessary during the day; Sprinkle the brick pile with a hose for a period long enough for water to run down the side of the pile; Use wetting methods which ensure that each masonry unit is nearly saturated but surface dry when laid; (DO NOT wet stone masonry units).
5. Repair flashing if necessary.
6. Where fresh masonry joins existing work, clean the exposed surface of the set masonry by removing loose brick and mortar and wet lightly to obtain the best possible bond with the new work.

3.03 ERECTION, INSTALLATION, APPLICATION

A. Replacing Deteriorated Units with Full-Size Bricks:

1. Carefully remove deteriorated brick units by hand using a hammer and chisel.
2. Rebuild back-up and substrate as required to replace any unsound material that was removed.
3. Clean the cavity of loose mortar and other debris by hand using a chisel and stiff bristle brushes.

4. Lightly wet the exposed brick surfaces.
5. Lay brick units with completely filled bed and head joints; Butter ends with sufficient mortar to fill head joints and shove into place.

NOTE: Lay masonry plumb and true following the coursing and patterns of the adjacent existing sound construction; Level off work at required heights and form beds to build-in salvaged or moved materials.

6. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.
7. Blend new work into existing work smoothly with no lines of demarcation and no change of pattern or coursing.
8. Rake all joints in replacement work to receive pointing; Joints shall be raked back a minimum of two times the width of the joint. Joints 3/8" in width shall be raked to a minimum depth of 3/4"; Joints 3/16" in width shall be raked to a minimum depth of 3/8".
9. Brush all excess mortar from the wall surface frequently during the work; Protect all existing surfaces from mortar dripping and splashing.

3.04 ADJUSTING/CLEANING

- A. Clean off adjacent surfaces which have been spattered during the course of the work. Rinse immediately with clean, clear water.
- B. Wipe all excess mortar as the work progresses. Dry brush at the end of each day's work.
- C. After mortar is thoroughly set and cured, remove loose mortar and dirt from new masonry surfaces.
- D. Wash down the masonry surface with clean, clear water.

END OF SECTION 042110

SECTION 045200 - NEW TERRA COTTA

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. The work of this section includes but is not limited to the labor, materials and incidental services associated with the fabrication of replication terra cotta units for existing terra cotta units as noted on drawings. The new terra cotta units shall match existing cleaned terra cotta units to be replaced in all respects including: size, dimensions, profiles, surface color, finish type and texture.
- B. The Contractor shall fabricate machine-extruded and/or mold-pressed terra cotta made from clay and grog and having a vitrified or glazed ceramic finish suitable for use on exterior masonry walls.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 04 52 50 – Terra Cotta Restoration and Repair

1.3 QUALITY ASSURANCE

- A. The work shall be performed by an experienced fabricator with experience in terra cotta fabrication and replication. The fabricator must have a minimum of five (5) years of experience, adequate facilities and capacity to furnish the quality, size and quantity of units required. Manufacturer must demonstrate three similar projects completed satisfactorily. References from these projects must be submitted to the Architect for approval.
- B. Standards: American Society for Testing and Materials (ASTM) C-126 criteria, and manufacturers' printed recommendations.
- C. Source of Materials: Obtain materials for terra cotta replication from a single source for each type required to ensure a match in quality, color, texture, and pattern.
- D. The architect or their representatives shall be given regular access to the delivered materials. Within one week of job site delivery, the architect shall have the right to reject unsatisfactory units and request new units at no additional cost.
- E. The fabricator shall replace all broken, lost and damaged terra cotta units or new units with major defects such as blemishes, incorrect size, colors, finishes, chips or flaws in glazed surfaces.
- F. In acceptance or rejection of the work of this section, no allowances shall be made for lack of skill on the part of the fabricators.