

SECTION 040120.64
BRICK MASONRY REPOINTING

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications section "General Conditions to the Construction Contract", "Special Conditions" and "Division 01 -General Requirements" form a part of this Section by this reference there to and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. Section includes repair work consisting of repointing brick masonry as follows:

- 1. Repointing of Face Brick Joints with mortar.

- B. Related Requirements:

- 1. Section 024119 "Selective Demolition" for removal and dismantling work.
 - 2. Section 040322 "Brick Masonry Repair" for repair of brick unit masonry.

1.3 DEFINITIONS

- A. Low-Pressure Spray:

- 1. Pressure: 100 to 400 psi.
 - 2. Flow Rate: 4 to 6 gpm.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site directly following a biweekly site meeting.

- 1. Review methods and procedures related to repointing brick masonry, including, but not limited to, the following:
 - a. Mason's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Materials, material application, sequencing, tolerances, and required clearances.
 - c. Quality-control program.
 - d. Fire-protection plan.
 - e. Brick masonry repair program.
 - f. Coordination with building occupants.

1.5 SEQUENCING AND SCHEDULING

- A. Order materials for pointing mortar immediately after approval of samples and mock-ups.

- B. "Work Sequence" Paragraph below is an example only; revise to suit Project or delete if not prescribing a work sequence. It assumes that cleaning, if required, precedes repointing. For this, masonry and joints must be sound enough to prevent water and chemicals from penetrating into building.
- C. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in mortar joints according to "Repointing" Article.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include recommendations for product application and use.
 - 3. Include test data substantiating that products comply with requirements.
- B. Shop Drawings:
 - 1. Show locations of scaffolding and points of scaffolding in contact with masonry. Include details of contact or anchorage.
- C. Samples for Initial Selection: For the following:
 - 1. Pointing Mortar: Submit sets of mortar for pointing in the form of sample mortar strips, 6 inches long by 1/4 inch wide, set in aluminum or plastic channels one set for each building or mortar type
 - a. Have each set contain a close color range of at least three. Samples of different mixes of colored sands and cements that produce a mortar matching existing, cleaned mortar when cured and dry.
 - b. Submit with precise measurements on ingredients, proportions, gradations, and sources of colored sands from which each Sample was made.
 - 2. Sand Type Used for Pointing Mortar: Minimum 8 oz. of each in plastic screw-top jars.
 - a. For blended sands, provide Samples of each component and blend. Identify blend ratio.
 - b. Identify sources, both supplier and quarry, of each type of sand.
 - 3. Include similar Samples of accessories involving color selection.
- D. Samples for Verification: For the following:
 - 1. Each type, color, and texture of pointing mortar in the form of sample mortar strips, 6 inches long by 1/4 inch wide, set in aluminum or plastic 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.
 - 2. Accessories: Each type of anchor, accessory, and miscellaneous support.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For masons including field supervisors and workers and testing service.
- B. Quality-control program.
- C. Brick masonry pointing program.

1.8 QUALITY ASSURANCE

- A. Mason Qualifications: A qualified mason with seven (7) years' experience. Experience in pointing or repointing only new masonry is insufficient experience for masonry repointing and pointing work on this project.
- B. 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 and tools without damaging masonry. Include provisions for supervising worker performance and preventing damage.
- C. Brick Masonry Pointing Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of masonry work, including protection of surrounding materials 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 repair, add to the quality-control program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project.
- D. Mockups: Prepare mockups of pointing on existing surfaces to demonstrate texture, color, and tooling and to set quality standards for materials and execution. Prepare mock-ups at each building
 - 1. Repointing: Rake out joints in two separate areas, each approximately 24 inches high by 36 inches wide for each type of repointing required and repoint one of the areas.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 PRECONSTRUCTION SAMPLE

- A. Preconstruction Sample: Contractor is to send samples of existing original mortar to pre-blended mortar manufacturer for matching color and texture for each building.
 - 1. Temporary Patch: As directed by Architect, provide temporary materials at locations from which existing samples were taken.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

- 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 sand where grading and other required characteristics can be maintained, and contamination avoided.

1.11 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit repointing work to be performed according to product manufacturers' written instructions and specified requirements.
- B. Temperature Limits: Repoint mortar joints only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least seven days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Comply with the following procedures for mortar-joint pointing unless otherwise indicated:
 - 1. When air temperature is below 40 deg, heat mortar ingredients and existing masonry walls to produce temperatures between 40 and 120 deg F.
 - 2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after pointing.
- D. Hot-Weather Requirements: Protect mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Source Limitations: Obtain each type of material for repointing masonry (cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 MORTAR MATERIALS

- A. In "Portland Cement" Paragraph below, gray Portland cement is sometimes used to help obtain correct mortar color.
 - 1. Pointing Mortar: Preblended, factory-mixed cementitious product that is custom manufactured for repointing masonry is preferred for this project.
 - 2. Products: Basis of Design subject to compliance with requirements, provide the following:
Spec Mix: preblended Portland, Lime and Sand. As manufactured by Spec Mix, LLC

1230 Eagan Industrial Road, Suite 160. 888-Spec-Mix or comparable product by one of the following or equal as approved by the professional:

- a. Glen-Gery Color Mortar Blend: a prepackaged mortar shall be custom-colored matched. As manufactured by Glen-Gery Corporation 1166 Spring St. Wyomissing, PA 19610. (610) 374-4011.
 - b. Amerimix AMX 400 Series Portland Cement, Lime, and Sand Mortar: a prepackaged mortar shall be custom-colored matched. As manufactured by Amerimix 900 Ashwood Pkwy, Suite 600. Atlanta, GA 30338. (888) 313-0755.
3. Formulate pointing mortar used for repointing brick masonry in colors and textures to match each unit being repointed.
- B. Portland Cement: ASTM C 150/C 150M, Type I or Type II; white, or gray or both, where required for color matching of mortar.
1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C114.
- C. Hydrated Lime: ASTM C207, Type S
- D. Water: ASTM C 270, potable.
- E. Mortar Sand: ASTM C144 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. Color: Natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.
 2. Provide sand with rounded edges.
- F. Mortar Pigments: ASTM C979/C979M, compounded for use in mortar mixes, and having a record of satisfactory performance in masonry mortars. Approved manufacturers:
1. Davis Colors.
 2. Euclid Chemical Company (The); an RPM company.
 3. Lanxess Corporation.
 4. Solomon Colors, Inc.

2.3 ACCESSORY MATERIALS

- A. Masking Tape: Non staining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.
- B. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:
1. Previous effectiveness in performing the work involved.
 2. Minimal possibility of damaging exposed surfaces.
 3. Consistency of each application.
 4. Uniformity of the resulting overall appearance.
 5. Do not use products or tools that could do the following:

- a. Remove, alter, or harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in Contract.
- b. Leave residue on surfaces.

2.4 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. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.
 - 1. Mortar Pigments: Where mortar pigments are indicated, do not add pigment exceeding 10 percent by weight of the cementitious or binder materials, except for carbon black, which is limited to 2 percent, unless otherwise demonstrated by a satisfactory history of performance.
- C. Do not use admixtures in mortar unless otherwise indicated.
- D. Mixes: Mix mortar materials in the following proportions (final mix designs are dependent on testing of existing mortars and matching by pre-blended cementitious mortar manufacturers):
 - 1. Pointing Mortar by Type: ASTM C270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime. Add mortar pigments to produce mortar colors required. (See schedule for mortar type for each portion of masonry.)

PART 3 - EXECUTION

3.1 PROTECTION

- A. Prevent mortar from staining face of surrounding masonry and other surfaces.
 - 1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
 - 2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
 - 3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.
- B. Remove gutters and downspouts and associated hardware adjacent to immediate work area and store during masonry repointing work. Reinstall when repointing is complete.
 - 1. Provide temporary rain drainage during work to direct water away from building.

3.2 MASONRY REPOINTING, GENERAL

- A. Have repointing work performed only by mason experienced in pointing of older buildings.
- B. Appearance Standard: Repointed surfaces are to have a uniform appearance as viewed from 20 feet by Architect.

3.3 WIDENING JOINTS

- A. Do not widen a joint.

3.4 REPOINTING: See drawings for locations

- A. Rake out and repoint joints to the following extent:
 - 1. All joints in areas indicated.
 - 2. Joints indicated as sealant-filled joints.
 - 3. Joints at locations of the following defects:
 - a. Holes and missing mortar.
 - b. Cracks that can be penetrated 1/4 inch or more by a knife blade 0.027 inch thick.
 - c. Cracks 1/8 inch or more in width and of any depth.
 - d. Hollow-sounding joints when tapped by metal object.
 - e. Eroded surfaces 1/4 inch or more deep.
 - f. Deterioration to point that mortar can be easily removed by hand, without tools.
 - g. Joints filled with substances other than mortar.
- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved mockup:
 - 1. Remove mortar from joints to depth of not less than 3/4 inch and not less than that required to expose sound, unweathered mortar. Do not remove unsound mortar more than 2 inches deep; consult Architect for direction.
 - 2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
 - 3. Do not spall edges of bricks or widen joints. Replace or patch damaged bricks as directed by Architect.
 - a. Cut out mortar by hand with chisel and resilient mallet. Do not use power-operated grinders without Architect's written approval based on approved quality-control program.
 - b. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar in bed joints and mortar in head joints by hand with chisel and resilient mallet. Strictly adhere to approved quality-control program.
- D. Notify Architect and DGS Bureau of Construction of unforeseen detrimental conditions, including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.
- E. Pointing with Mortar:

1. Rinse 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 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 until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
 3. After deep areas have been filled to same depth as remaining joints, point joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow it to become thumbprint hard before applying next layer. Where existing brick have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
 4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
 5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.
 - a. 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.
 - b. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
 6. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Remove mortar and repoint.
- F. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.5 FINAL CLEANING

- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, applied by low-pressure spray.
1. Do not use metal scrapers or brushes.
 2. Do not use acidic or alkaline cleaners.
- B. Clean adjacent non masonry surfaces. Use detergent and soft brushes or cloths.
- C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- D. Remove masking materials, leaving no residues that could trap dirt.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Client Agency will engage qualified testing agencies to perform tests and inspections. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

- B. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- C. Notify testing agency, Architect's Project representatives, and DGS in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until inspectors and Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

3.7 BRICK MASONRY POINTING MORTAR SCHEDULE:

Brick Masonry Pointing Mortar Schedule		
Material:	Mortar:	Mortar Type According to ASTM C270:
Face Brick	Spec Mix preblended Portland, Lime and Sand, or similar	Type N*

*Masonry Cement and Type S mortar are not allowed on this job.

END OF SECTION 040120.64