NOTE TO PROJECT ARCHITECT: THIS SECTION IS INTENDED FOR USE ON EXISTING CONSTRUCTION

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Provisions of Division 01 apply to this section

B. Section Includes:

1. Pressure injection of epoxy resin and cleaning of existing masonry and stone work.

2. Repointing and caulking of cracks as required.

3. Removal of plant growth.

C. Related Sections:

1. Section 04 70 00: Brick Masonry.

2. Section 04 22 20: Concrete Unit Masonry.

3. Section 09 90 00: Paints and Coatings.

**1.02 SYSTEM DESCRIPTION**

A. Regulatory Requirements:

1. State or municipal regulations governing sandblasting, cleaning, scaffolding, and protection of adjacent properties.

2. Drawings detailing temporary support of structure shall be prepared, signed, and sealed by a structural engineer registered in the State of California.

**1.03 SUBMITTALS**

A. Shop Drawings: Submit Shop Drawings indicating areas to receive restoration.

B. Product Data:

1. Submit manufacturer's product literature and application procedures.

2. Submit laboratory test reports or approvals indicating conformance with the Specifications.

**1.04 QUALITY ASSURANCE**

A. Comply with the following as a minimum requirement:

1. ASTM C 881 - Epoxy-Resin-Base Bonding Systems for Concrete.

2. ASTM D 638 - Tensile Properties for Plastics.

3. ASTM D 695 - Compressive Properties of Rigid Plastics.

4. ASTM D 790 - Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

B. Continuous inspection of epoxy repair procedures shall be performed by the PI.

C. Inspection shall be performed by a representative of a testing laboratory selected by the Owner. Notify the laboratory 24 hours in advance of time epoxy is to be mixed, and promptly notify the laboratory of postponement or cancellation of mixing.

D. Applicator of epoxy resin adhesive and concrete repair shall be certified by the manufacturer.

E. Manufacturer: Regularly engaged in manufacture of epoxy resin products for at least 10 years. Provide references of at least 5 projects for which epoxy resin adhesive treatment was installed.

**1.05 PROJECT CONDITIONS**

A. Materials shall not be applied during existing or forecasted freezing or inclement weather.

B. Adjacent surfaces, to the areas receiving treatment, shall be protected from damage from equipment, tools or materials.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Deliver materials to the Project site in manufacturer's unopened containers bearing manufacturer's name and product identification.

B. Store and condition materials as recommended by product manufacturer.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURER**

A. For purpose of establishing acceptable criteria for treatment of cracks and restoration of masonry walls, submit a product of the following manufacturers:

1. Sitka Corporation, Santa Fe Springs, CA.

2. Fosroc Inc., Woodland, CA.

3. The Euclid Chemical Company, Trabuco Canyon, CA.

**2.02 MATERIALS**

A. Epoxy Resin Adhesive:

1. New material within the shelf life recommended by manufacturer.

2. Two-part material made from 100 percent solids of modified epoxy resin containing suitable viscosity control agents and accelerators.

3. Mix components in ratio recommended by product manufacturer.

4. Material shall not contain butyl glycidyl ether or asbestos.

5. Epoxy resin adhesive shall be approved by the United States Department of Agriculture.

B. Materials for Masonry Restoration:

1. Sikadur 35, Hi-Mod LV, by Sika Corporation.

2. Nitobond ULV, by Fosroc Inc.

3. Euco #452 LV System, by the Euclid Chemical Company.

C. Materials for Cleaning Masonry:

1. Acid Solution: Clean, stain free, commercial hydrochloric (muriatic) acid mixed with potable water:

a. Use 10 parts water for dark colored brick.

b. Use 15 parts water for light colored brick.

PROJECT ARCHITECT NOTE: ARCHITECT TO INSERT PROPER MORTAR TYPE BELOW.

D. Mortar: ASTM C 387, using gray or white cement, commercially prepared type.

E. Hydrated Lime: ASTM C 207.

F. Quicklime: ASTM C 5, non-hydraulic type.

G. Sand (for sandblasting): Quartz type, sharp edged.

H. Masonry Anchors: DA 213 Seismic as fabricated by DUR-O-WAL, when brick is removed and installed. Masonry anchors shall be D 5300 series for brick veneer around wood framing when brick is left in place.

**PART 3 - EXECUTION**

**3.01 GENERAL**

A. Sample Test Area for Cleaning: Before commencement of Work, cleaning procedures and solutions shall be applied to a sample test area of approximately 20 square feet. The effectiveness of the cleaning method will be determined by inspection of the test area at least one week after application.

**3.02 PREPARATION**

A. Remove and store items such as finish hardware, fixtures, fittings, and accessories.

B. Construct dustproof partitions to close off occupied areas from this Work. Protect adjacent materials from damage by the Work of this section.

C. Surface adjacent to cracks must be clean and sound; cracks shall be free of standing water and frost. Remove dust, grease, foreign particles, and disintegrated materials on surface adjacent to cracks by sandblasting, high-pressure water blasting or high-pressure steam cleaning.

D. For gravity flow grouting, V-notch surface of crack, to a maximum width of 1/4 inch and remove loose debris.

**3.03 APPLICATION**

A. For manual application of epoxy resin adhesive, mix only that quantity of material that can be used in 20 to 30 minutes at 73 degrees F.

B. For pressure injection, portable unit shall be provided with positive displacement type pumps, air-powered or electric, with interlock for positive ratio control of exact proportions of material at nozzle. Pumps shall provide in-line mixing and metering system and contain drain-back plugs.

C. Placement Procedures:

1. Pressure Injection: To seal cracks, set porting devices as required by manufacturer. Spacing shall not exceed thickness of substrate and shall be accomplished to achieve travel of material for grouting between ports; fill grouts to maximum. On structures accessible on both sides, provide grouting devices on opposite sides at staggered elevations. Apply mixed epoxy resin adhesive for sealing, over cracks and around each porting device, to provide adequate seal to prevent escape of adhesive for injection grouting. Where required, apply adhesive for sealing in a manner to provide minimal defacing discoloration.

2. Gravity Flow Grouting: Place mixed material into V-notches and replenish reservoir with material until cracks are completely filled.

D. If penetration of crack is not possible, notify Architect before stopping the Work. If modification of procedure is required to fill cracks, submit proposed modifications for review prior to proceeding.

E. Provide masonry restoration materials in accordance with manufacturer's written recommendations.

**3.04 CLEANING EXISTING MASONRY**

A. Where serious staining is indicated, provide the following:

1. Apply high pressure (700 psi or greater) steam cleaning to masonry surfaces with detergent in accordance with manufacturer's directions.

2. If existing coating is lead-based paint, notify the Architect before proceeding.

B. Sandblasting: Do not sandblast brick or mortar.

**3.05 CLEANING NEW MASONRY**

A. Ensure that mortar is thoroughly set and cured.

B. Clean surfaces and remove large particles with wood scrapers, wire brushes, or chisels.

C. Saturate masonry with clean water and flush off loose mortar and dirt.

D. Scrub walls with detergent solution using stiff brush.

E. Thoroughly rinse and wash off cleaning solution, dirt, and mortar crumbs using clean, pressurized water.

**3.06 RESTORATION CLEANING**

A. Clean surfaces and remove large particles of excess mortar with wood scrapers or wire brush.

B. Apply masonry restoration cleaner, mixed into solution in strict accordance with manufacturer's instructions.

C. Apply a second coat if required by preliminary test of a sample area.

D. Allow sufficient time for solution to remain on masonry, agitate with soft fiber brush or sponge.

E. Rinse from bottom up with potable water at high pressure.

**3.07 TUCK POINTING**

A. Cut out loose or disintegrated mortar in joints, without damage to masonry units.

B. Tuck pointing mortar shall not be denser than original mortar. In absence of information on the original mortar, provide pre-hydrated mortar.

**3.08 AGING MASONRY**

A. Perform an aging process, if required to match existing Work by rubbing and then removing excess carbon black into mortar surface. Repeat process until new Work matches existing. Prepare a Sample panel for Architect review before performing the Work.

1. Rub carbon black with burlap rags or medium bristle brush.

2. After each installation, dust off surplus and wash down with medium pressure hose. Allow to thoroughly dry before proceeding with succeeding installations.

**3.09 CLEANUP**

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

**3.10 PROTECTION**

A. Protect the Work of this section until Substantial Completion.

**END OF SECTION**