

SECTION 04910CP – MASONRY RESTORATION

PART 1 - GENERAL

- 1.01 This section includes design and performance criteria for cutting, rebuilding, repairing, patching, replacing, cleaning and jointing masonry.
- 1.02 BRICK MASONRY
 - A. As a minimum, comply with recommendations of the Brick Institute of America (BIA) for design and workmanship, except as modified below.
 - B. Cold-Weather Protection: As a minimum meet following requirements, which are more stringent than the BIA requirements.
 - 1. All projects continuing through the winter (October through March) must have shrouds in place or on site where they can be rapidly installed. Heat tends to stratify at the top of the enclosure. As a result, do not extend the enclosure far beyond the work surface.
 - 2. When the temperature falls below 40 degrees, heat the enclosure to keep the temperature above 45 degrees at all times.
 - 3. Store masonry materials such as stone, sand, lime and Portland cement, indoors or in a heated enclosure. Pre-heat all mortar ingredients (including water) to 70 degrees.
 - C. Hot-Weather Protection: Protect stone masonry-veneer work when temperature and humidity conditions produce excessive evaporation of water from mortar. Provide artificial shade and wind breaks and use cooled materials as required. Do not use mortar products when ambient temperatures are above 100 degrees.
- 1.03 CONCRETE MASONRY
 - A. Comply with the Specification for the Design and Construction of Load Bearing Concrete Masonry, by the National Concrete Masonry Association.
- 1.04 Project manual shall specify what percentage of the wall requires patching, replacing or repointing.
- 1.05 This section shall be coordinated with through-flashing. A continuity shall be established when attaching to existing flashing.

- 1.06 A mockup of restored masonry exhibiting a minimum standard of quality shall be provided for approval. Restore and repoint a masonry wall sized 8 feet wide by 6 feet high, which includes mortar, ties, cavity waterproofing, insulation, wall openings and flashings.
- 1.07 Manufacturer shall specify unit price for brick and stone replacement as well as repointing.
- 1.08 Masonry contractors shall specialize in masonry restoration with a minimum of 10 years documented experience.
- 1.09 RELATED WORK
 - A. Section 00100 General Conditions for as-built samples

PART 2 - PRODUCTS

- 2.01 MASONRY MATERIALS
 - A. Brick: Reuse existing reclaimed brick or match existing as approved by Architect and Brown University Project Manager.
 - 1. Replacement brick shall be the same size, color, texture and strength of original brick as approved by Architect and Brown University Project Manager.
 - 2. Existing brick shall be cleaned prior to matching.
 - 3. Criteria for size and manufacturing process (water-struck, molded, wire-cut etc.) shall be specified.
 - B. Stone: Reuse existing reclaimed stone or match existing as approved by Architect and Brown University Project Manager.
 - 1. At a minimum new cast stone shall have a compressive strength of 6,500 psi.
 - C. Concrete Masonry Units: Reuse existing reclaimed CMU or match existing as approved by Architect and Brown University Project Manager.
 - D. Masonry shall be stronger than mortar.
- 2.02 Sealant joints shall not be allowed unless approved by a Brown University Project Manager; instead, use mortar.

- 2.03 If a sealant joint is specified the correct depth to width ratio must be achieved. In addition weeps shall be installed as well as a backer rod or bond-breaker on the back side.
- 2.04 Stainless steel pins shall be used with a copper thimble soldered to flashing to protect from water intrusion.
- 2.05 Accelerating additives and bricks with efflorescence shall not be allowed.

PART 3 - EXECUTION

3.01 CLEANING OF EXISTING STONE

- A. Remove and reinstall downspouts.
- B. The use of sand blasting, powered wire brushing or harsh acids shall not be allowed.
- C. The contractor shall provide cleaning samples for each procedure specified and for each type of stone to be cleaned.

3.02 PATCHING OF EXISTING STONE

- A. Limited patching may be allowed with the approval of a Brown University Project Manager.
- B. Small spalls can be epoxied back in place if the spall is partially attached. Spalls of less than 6 inches in diameter can be patched with repair mortar.
- C. Spalls larger than 6 inches and in locations not readily visible can be repaired with a "Dutchman" patch. Depending upon location and size of patch, complete replacement of the stone panel may be required.
- D. Small cracks in the stone can be filled with a clear epoxy joint sealant.

3.03 REPLACING OF EXISTING STONE

- A. When replacing stone, some investigation is necessary to identify the cause of the stone's deterioration. Often, the stone exhibiting damage is symptomatic of failure of shelf angle systems or rusting of pins and stone anchors. Dark surface staining of stone may indicate water intrusion due to improper flashing or absorption of water from the ground.

- B. Surface spalling over large areas at building entrances may be due to de-icing salts penetrating the stone and freezing. Replacement of the stone is the only solution.

3.04 REPOINTING OF EXISTING MORTAR

- A. Full depth mortar at all heads and bed joints shall be provided for new construction. The cavity shall be kept clean of mortar droppings and debris. An effective method to keep the cavity clean is to lay every third brick at the base course above the flashing dry. When the wall panel is completed, the contractor can remove the loose bricks and clean out the cavity, then fill in the bricks with mortar.
- B. All dry mortar ingredients shall be thoroughly mixed before adding water
- C. Depth shall be 1.5x width of the joint.
- D. Arris shall be exposed to avoid a lipstick joint.
- E. Dry brush newly completed masonry and exposed flashing daily to remove mortar. Do not stain brick face or any other surfaces with mortar droppings or other substances.

3.05 Power tuck grinders shall be used for horizontal cuts only. Vertical cuts shall be hand cut. Bricks shall always be cut, not broken, with a tool.

3.06 Remove prior mortar using a combination of hand tools and power tuck grinders. Power tuck grinders (diamond blade) shall have the narrowest blades available in order to avoid chipping the edges of the brick. Power equipment may be used only to score the first cut in the center of a joint with subsequent mortar removal and finish cleaning done with hand tool, unless otherwise approved by the Architect or Brown University Project Manager.

END OF SECTION