

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1    Section 04 03 08 - Historic - Mortaring.
- .2    Section 04 05 00 - Common Work Results for Masonry.
- .3    Section 07 62 00 - Sheet Metal Flashing and Trims.
- .4    Section 26 41 13 - Lightning Protection for Structures.

**1.2                ALTERNATES**

- .1    Obtain Departmental Representative's written approval before changing procedures, manufacturer's brands, sources of supply of materials during entire contract.

**1.3                REFERENCES**

- .1    Definitions:
  - .1    Repair of Stone: mechanical or plastic repair, done to restore original appearance and function of partly deteriorated stones.
  - .2    Filling: material used to rebuild broken or deteriorated part of stone.
  - .3    Mortar: material used to re-bed the stone element being repaired and to repoint adjacent mortar joints.
- .2    Reference Standards:
  - .1    ASTM International
    - .1    ASTM C144, Standard Specification for Aggregate for Masonry Mortar.
    - .2    ASTM A276, Standard Specification for Stainless Steel Bars and Shapes.
  - .2    CSA International
    - .1    CSA A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
    - .2    CAN/CSA A179, Mortar and Grout for Unit Masonry.

**1.4                ACTION AND INFORMATIONAL SUBMITTALS**

- .1    Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2    Product Data:
  - .1    Provide manufacturer's printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations. Include:
    - .1    Application/installation instructions.
    - .2    Laboratory test reports certifying compliance of products with specification requirements.

- .3 Manufacturer's material safety data sheets (MSDS) for safe handling of specified materials and products, in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
- .3 Certificates:
  - .1 Submit upon request by Departmental Representative purchase orders, invoices, suppliers test certificates and documents to prove materials used in contract meet requirements of specification. Allow free access to sources where materials were procured.

## **1.5 CLOSEOUT SUBMITTALS**

- .1 Record Documentation:
  - .1 Provide marked up set of drawings to provide referencing system identifying locations of stone repairs.
  - .2 Provide photographically record of dismantle and rebuilt stonework.

## **1.6 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Refer to Section 04 05 00 - Common Work Results for Masonry.
- .2 Mock-ups:
  - .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
  - .2 Fill in/repair a minimum of (4) holes as a representative sample, with specified materials and methods.
  - .3 Use existing stonework when constructing job mock-up.
  - .4 Select locations of mock-ups in consultation with Departmental Representative.
  - .5 Notify Departmental Representative (48) hours before commencing each mock-up.
    - .1 Obtain approval from Departmental Representative before commencing mock-up.
  - .6 Allow mock-ups of plastic repairs to cure at least (3) days.
    - .1 Obtain Departmental Representative's approval for colour match.
  - .7 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with stone repair work.
  - .8 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.
  - .9 Clean mock-up to demonstrate cleaning operations to Departmental Representative before starting cleaning work.

## **1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements:

- .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
  - .1 Identification with grade, batch and production date shown on container or packaging.
  - .2 Store materials in a clean, dry enclosed area and supported free of ground. Maintain a minimum ambient temperature of 10 degrees C in storage area.
- .3 Packaging Waste Management: remove in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **1.8 AMBIENT CONDITIONS**

- .1 Maintain a minimum temperature of 10 degrees C during and 48 hours after repair, throughout thickness of stone.
- .2 Allow materials to reach minimum temperature of 10 degrees C prior to use.
- .3 Maintain temperature between 21 degrees C and 24 degrees C during repair and 48 hours after, throughout thickness of stone.
- .4 Provide temporary enclosures and heating equipment to maintain specified temperatures. Take precautions to avoid overheating masonry.
- .5 Remove work exposed to lower temperatures as directed by Departmental Representative.
- .6 Refer to manufacturer's instructions for environmental requirements of products.
- .7 Hot weather and summer requirement:
  - .1 Shade stones from direct sunlight with temporary cover.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Use materials from same manufacturer throughout the Work.
- .2 Water: clean and free of deleterious materials such as acid, alkali and organic material in accordance to CAN/CSA A179.
- .3 Plumber's adhesive tape.

### **2.2 MORTAR MIXES**

- .1 Stone restoration mortar: in accordance with Section 04 03 08 - Historic - Mortaring.

## **Part 3 Execution**

### **3.1 SITE VERIFICATION OF CONDITIONS**

- .1 Report in writing, to Departmental Representative areas of deteriorated stone not identified in the documents.

- .2 Obtain Departmental Representative's approval and instructions for repair and replacement of masonry units before proceeding with repair work.
- .3 Stop work in that area and report to Departmental Representative immediately any evidence of hazardous materials.

### **3.2 PREPARATION**

- .1 Obtain Departmental Representative's approval for tools to be employed prior to commencing work.
- .2 Obtain Departmental Representative's approval for alternative repair methodology and tools to be employed prior to commencing work.

### **3.3 PROTECTION**

- .1 Prevent damage to stone surfaces, mortar joints, building, fencing, trees, landscaping, natural features, bench marks, pavement, utility lines which are to remain. Make good damage incurred.
- .2 Protect surrounding components from damage during work.
- .3 Take utmost care not to damage historic fabric. Make good damage incurred.
- .4 Obtain Departmental Representative's approval for repair methodology.

### **3.4 REFACING A STONE IN WHICH HOLES HAVE BEEN DRILLED, WITH FILLING**

- .1 Following the removal of the anchors attaching the existing downspouts and conductive cables of the lightning protection system:
  - .1 Remove dust from cavity and wet surfaces.
  - .2 Fill in holes left in the stone by gradually building up new filling in layers not exceeding 25 mm thickness. Allow each layer to set as indicated by the manufacturer before proceeding with next.
  - .3 Use wood float and avoid excessive trowelling to prevent crazing.
  - .4 Clean filling mortar residue from area surrounding patch: sponge as many times as necessary with clean water. Do this before patching material sets.
  - .5 Remove laitance with stiff, near-dry fibre brush.
  - .6 Form mortar to match profile of surrounding stone.
  - .7 Cover repairs with damp cloths. Keep covering moist during curing period. Occasionally spray covering with water for several days.
  - .8 Repoint with specified mortar. Joints to match existing.

### **3.5 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Obtain Departmental Representative's approval of cleaning operations before starting cleaning work.
- .3 Protect plants, grass vegetation and adjacent grounds from excessive water accumulation

- .4 Clean stone work surfaces after repairs have been completed and mortar has set.
- .5 Clean stone surfaces of adhesive or mortar residue resulting from work performed without damage to stone or joints.
- .6 Clear site of debris, surplus material and equipment, leaving work area in clean and safe condition.
- .7 Waste Management: separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**3.6 PROTECTION OF COMPLETED WORK**

- .1 Protect finished work from impact damage for period of two weeks.

**END OF SECTION**