

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1    Section 01 35 92 –Special protections for historical buildings
- .2    Section 09 22 14 – Furring and lathing
- .3    Section 09 91 23 – Painting - interior works

**1.2                REFERENCES**

- .1    American Society for Testing and Materials International (ASTM)
  - .1    ASTM C5-03, Standard Specification for Quicklime for Structural Purposes.
  - .2    ASTM C1489-01, Standard Specification for Lime Putty for Structural Purposes
  - .3    ASTM C35-01(2009), Standard Specification for Inorganic Aggregates for Use in Gypsum Plaster.
  - .4    ASTM C206-2009, Standard Specification for Finishing Hydrated Lime.
  - .5    ASTM C631-09, Standard Specification for Bonding Compounds for Interior Gypsum Plastering.
  - .6    ASTM C841-03(2008), Standard Specification for Installation of Interior Lathing and Furring.
  - .7    ASTM C842-05, Standard Specification for Application of Interior Gypsum Plaster.
  - .8    ASTM C1047-10, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .2    Canadian Standards Association (CSA International)
  - .1    CAN/CSA-A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .3    Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1    Material Safety Data Sheets (MSDS).

**1.3                PERFORMANCE REQUIREMENTS**

- .1    Match plaster and cement parging (in mechanical rooms of East Wing) as close as possible to existing coverings with regard to color, texture and profile.
- .2    Finished plaster and parging must be exempt of fissure and delamination.

**1.4                SUBMITTALS**

- .1    Submit documents and samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2    Submit two copies MSDS - Material Safety Data Sheets required under the WHMIS (Workplace hazardous materials information system), in conformance with section 01 35 29.06 – health and safety, for materials used in the present section. Indicate VOC content.

- .3 Provide all technical data sheets of products necessary for the works.
- .4 Submit required documents according to section 01 33 00 Submittal procedures.

## **1.5 MOCK-UPS**

- .1 Mock-up: construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Locate where indicated by Departmental Representative.
- .3 Do (5) representative mock-ups of each type of plaster repair in the list below, at locations designated by Departmental Representative for his approval :
  - .1 Preparation works of surfaces of historic plaster of 3 sq.meters
  - .2 Works of delicate curettage and restoration of historic plasters of 3 sq.meters on brick substrate (item no.8 in legend of interior repairs in plans).
  - .3 Reconstruction works of 3 sq.meters with new plaster in historic context (item no.22 in legend of interior repairs in plans).
  - .4 Resurfacing works of historic plaster of 3 sq.meters. (Item no.23 in legend of interior repairs in plans).
  - .5 Repair works of hole in plaster up to 25 mm diameter (item no.25 in legend of interior repairs in plans).
  - .6 Repair works of hole in plaster of more than 25 mm diameter (item no.26 in legend of interior repairs in plans).
  - .7 Works of delicate curettage and restoration of historic plasters on wood lath of 3 sq.meters.
  - .8 Plaster consolidation by injection (1 sq.meter.)
  - .9 Primer and latex painting works of restored plasters of 3 sq.meters
- .4 Allow 5 days for inspection of mock-up by Departmental Representative before proceeding with plaster work.
- .5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

## **1.6 COORDINATION MEETINGS WITH CONTRACTOR AND SPECIALIZED SUBCONTRACTORS**

- .1 The following meetings with the Departmental Representative, the Contractor and his specialized Subcontractor are obligatory:
  - .1 Start off meeting before the beginning of the works mock-ups described in this section.
  - .2 Coordination meeting before starting preparation works of historic plaster.
  - .3 Coordination meeting before starting restoration and repair works of historic plaster.

## **1.7 QUALITY ASSURANCE AND OBLIGATORY INSPECTIONS**

- .1 Contractor must obligatorily obtain approval of the following works by the Departmental Representative before passing to the following step:
  - .1 All mock-ups of the works.
  - .2 Preparation works for plaster.
  - .3 Application works of ceramic based coating Astec 900.
  - .4 Repair, restoration, resurfacing and reconstruction works of plasters before painting works.
  - .5 Painting works.
- .2 Workers must possess all the knowledge and experience required for the execution of historic plaster works and in patrimonial context as described in drawings and specifications and according to the 4 categories stated hereafter:
  - .1 preparation of historic plaster surfaces as described in the present section of the specifications;
  - .2 precision curettage and delicate restoration of historic plaster on a brick substrate.
  - .3 Setting up new plaster in a historic and patrimonial context.
  - .4 restoration of historic plaster
- .3 Each of the workers assigned to the works must have all licenses, permits and/or competency cards required for the execution of works in the province of Québec.
- .4 At the request of Departmental Representative, historic plaster contractor will have to present a document showing achievements of all his workers assigned to the project in work categories 1.1 to 1.4. In the event where achievements of one or several of the workers do not demonstrate that he or they have the necessary knowledge and/or experience for the execution of the works, Departmental Representative may order the contractor to replace the worker or workers.

At the request of Departmental Representative, the worker whose achievements demonstrates that he has the necessary experience and knowledge for the execution of the works, must make a work sample in one or several of the categories of the works stated at point .1.1 to .1.4 and this, in presence of Departmental Representative, in a manner to demonstrate that work processes and techniques are well controlled while meeting drawings and specifications requirements. In the event where performed samples do not demonstrate that he controls work processes and techniques necessary for the execution of the works, Departmental Representative may order the contractor to replace the worker or workers.
- .5 At any moment before or during the execution of the works, in case of unsatisfactory performance from a worker assigned to execution of the works, Departmental Representative may order contractor to replace the worker or workers who do not demonstrate a level of adequate competency for the execution of the works.

## **1.8 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
  - .1 Ensure bagged materials are delivered to site and stored in original containers.
  - .2 Ensure loose material is delivered, clean, and stored to prevent contamination by foreign material.
  - .3 Protect material from damage by moisture and freezing.

## **1.9 ENVIRONMENTAL REQUIREMENTS**

- .1 Conform to requirements of Workplace hazardous materials information system (WHMIS), relating to use, handling, storage and disposal of hazardous materials and to labeling and providing safety data sheets.

## **1.10 TEMPERATURE AND RELATIVE HUMIDITY CONTROL**

- .1 Do plaster work when ambient temperature is between 15 degrees C and 21 degrees C under conditions specified in ASTM C842.
- .2 Ventilate and heat work zones to facilitate proper application and curing of plaster in accordance with Section 01 51 00 - Temporary Utilities.
  - .1 Ensure that high temperatures do not affect plaster drying process when spotlights are used during repair of existing plaster.
- .3 Maintain air moisture content at 50% relative humidity without exceeding 60% to facilitate proper curing of plaster and minimize cracking.
  - .1 Keep records of actual air moisture content for specified period of cure.
  - .2 Install data loggers to register environmental data - temperature and relative humidity – during the whole duration of the works and of the plaster curing.
- .4 Redo the works exposed to temperatures inferior or superior to those prescribed as directed by Departmental Representative.
- .5 A thermometer and relative humidity probe must be installed in each interior room where plaster works are being held. Checking temperature and relative humidity must be done at each hour even during the night (24 hours /24 and 7 days on 7 during all duration of plaster works.). The contractor must transmit all data of all thermometers and probes on a weekly basis in Excel format to Departmental Representative. All readings under 15 °C and over 25°C must be highlighted in the Excel file.
- .6 Ventilation :
  - .1 Ventilate the work zone in order to eliminate excess humidity.
  - .2 Take mechanical means to evacuate humid air in areas not provided with normal ventilation means.
  - .3 Protect the plaster against air coming from ventilation, heating devices and windows to prevent irregular drying.
  - .4 Avoid excessive ventilation or air movement in order to allow plaster to set adequately.

### **1.11 WORKS IN DECONTAMINATION CONTEXT**

- .1 The historic existing plaster contains asbestos. All preparation works of plaster surfaces and of restoring of historic plaster identified on the plans must be done in a decontamination context with the equipments and requirements described in the specifications.

### **1.12 SEQUENCE OF WORKS**

- .1 The sequence of plaster works must conform to section 01 14 23 Sequence of works.

### **1.13 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse, recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal. and section 04 05 00 – Common works results for Masonry.

### **1.14 ACCEPTABLE PRODUCTS AND MATERIALS**

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Wood Lath: Group 'D' dry rough sawn wood, of dimensions matching the existing - see section 09 22 14 Furring and lathing.
- .2 Nails: stainless steel wire type.
- .3 Gypsum Plaster: chemical setting plaster compound conforming to ASTM C842.
- .4 Shellac: Encapsulating primer which seals interior surfaces.
- .5 Ceramic based paint of Astec 900 type.
- .6 Ultrafine non shrinking lime grout for injection of fissures and voids.
- .7 Hydrated Lime: to ASTM C206.
- .8 Portland cement: to CAN/CSA-A3000.
- .9 Water: potable, free of substances that would affect set of plaster.
- .10 Binding compound: conforming to standard ASTM C631.
- .11 Accessories: metal accessories (corner beads, base screeds, cornerite, casing beads, flush moldings): conforming to standard ASTM C1047
- .12 Latex acrylic additive of type Rhoplex E-330

### **2.2 MIXES**

- .1 Ingredients must be mixed with mixer.
- .2 Accurately maintain measuring proportions from batch to batch.
- .3 Proceed with lime hydratation in metal containers.
- .4 Keep mixing tools and bins free of hardened residue.

- .5 Time limit: discard mix that is not used and placed within prescribed use time limit.

### **Part 3 Execution**

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

- .1 Examine and report in writing to Departmental Representative areas of deteriorated plaster not previously identified.

#### **3.2 EXAMINATION**

- .1 Obtain Departmental Representative's approval and instructions for repair or replacement of plaster before proceeding with repair work.
- .2 Verification of conditions: before proceeding to application of plaster, ensure that state of surfaces/supports previously implemented according to other sections or contracts are acceptable and allow to execute the works in conformance with manufacturer's written instructions.
- .1 Do a visual inspection of surfaces/supports in the presence of Departmental Representative.
- .2 Inform immediately Departmental Representative of any revealed unacceptable condition.
- .3 Begin installation works only after unacceptable conditions have been corrected and approved by Departmental Representative.

#### **3.3 PROTECTION**

- .1 Protect any fittings and surfaces adjacent to work by covering or masking.

#### **3.4 PREPARATORY WORKS**

- .1 Remove delicately weakened plaster zones and zones of deconsolidated paint with a plastic scraper.
- .2 Sand and remove all existing paint from all surfaces with an electric rotating sanding machine of 100mm diameter with #100 sand paper. Restricted zones and close to edges and irregularities (band of 25mm) of historic plaster surfaces will be sanded manually and not with electric sander.
- .3 Bevel edges of existing plaster to allow to join the new plaster when a plaster reconstruction is identified on plans.
- .4 Obtain Departmental Representative's approval of preparatory works.

#### **3.5 INSTALLATION OF LATHING SUPPORT**

- .1 Repair of lathing support
- .1 Remove and replace, as needed, damaged lathing by new wood laths.
- .2 Spacing of laths: identical to original spacing.
- .2 Install lathing on masonry support in conformance to standard ASTM C842.

**3.6 DEMOLITION AND RESTORATION OF EXISTING HISTORIC PLASTERS  
(item no.8 in the legend of interior repairs on plans)**

- .1 Restore carefully plaster covering (12mm thick.) and cement parging (25mm thick.) up to clay brick. Do the restoration manually in order to avoid damaging the patrimonial clay bricks.
- .2 Once cement parging removed, bricks must be brushed with soft bristle nylon brush to remove completely the traces of plaster on the wall.
- .3 Clean brick masonry surfaces with a soft chemical detergent and water after the restoration works of the plaster.
- .4 The cement parging under the plaster is very hard and very difficult to remove. No additional financial compensation will be granted to contractor just because this covering requires a high effort level to remove; also no delay to schedule will be justifiable for this reason.

**3.7 RECONSTRUCTION OF NEW PLASTER (item no.22 in legend of interior repairs on plans)**

- .1 Restore all weakened and deconsolidated plaster surfaces on the entire surface.
- .2 Apply a Shellac coating on the entire surface of prepared existing plaster.
- .3 Execute the new plaster covering with 10% of acrylic latex in conformance with standard ASTM C842. Apply the plaster up to 25mm of thickness on a clean surface: Remove the plaster dust and the plaster on surfaces. Apply the coating according to manufacturer's recommendations on masonry surfaces or on lathing as indicated on drawings.
- .4 Allow to dry during 4 days.
- .5 Apply the liquid ceramic based paint on the entire surface.
- .6 Allow to dry during for 48 hours.
- .7 Apply the paint system according to article 3.11

**3.8 PLASTER RESURFACING (item no.23 in legend of interior repairs on plans)**

- .1 Restore all weakened and deconsolidated plaster surfaces on the entire surface.
- .2 Apply a Shellac coating on the entire surface of prepared existing plaster.
- .3 Execute the new plaster resurfacing with 10% of acrylic latex in conformance with standard ASTM C842. Apply the plaster up to 6 mm of thickness on a clean surface: Remove the plaster dust and the plaster on surfaces. Apply the coating according to manufacturer's recommendations on masonry surfaces or on lathing as indicated on drawings.
- .4 Allow to dry during 3 days.
- .5 Apply the liquid ceramic based paint on the entire surface.
- .6 Allow to dry during for 48 hours.
- .7 Apply the paint system according to article 3.11

**3.9 HOLE TO REPAIR (25mm diam and less) IN HISTORIC PLASTER (item no.25 in legend of interior repairs on plans)**

- .1 Restore all weakened and deconsolidated plaster surfaces in the repair zone.
- .2 Fill hole with plaster and sand lightly.
- .3 Allow to dry during 1 day.
- .4 Apply the liquid ceramic based paint on the entire surface.
- .5 Allow to dry during for 48 hours.
- .6 Apply the paint system according to article 3.11

**3.10 HOLE TO REPAIR (25mm diam and more) IN HISTORIC PLASTER (item no.26 in legend of interior repairs on plans)**

- .1 Restore all weakened and deconsolidated plaster surfaces on the entire surface.
- .2 Apply a Shellac coating on the entire surface of prepared existing plaster.
- .3 Fill hole by successive layers with plaster in conformance with standard ASTM C842.
- .4 Apply the plaster coating on surface up to 25 mm of thickness on a clean surface. Remove the plaster dust and the plaster on surfaces. Apply the coating with 10% of acrylic latex according to manufacturer's recommendations on masonry surfaces or on lathing as indicated on drawings.
- .5 Allow to dry during 3 days.
- .6 Apply the liquid ceramic based paint on the entire surface.
- .7 Allow to dry during for 48 hours.
- .8 Apply the paint system according to article 3.11

**3.11 SURFACE TREATMENT AND PAINTING OF PLASTER**

- .1 Once plaster is restored, apply one coat of liquid ceramic based paint on the entire surfaces of all plaster surfaces in the contract. Allow to dry during for 24 hours.
- .2 Apply one primer coat and two coats of pearl finish latex paint. The color of paint is white. Apply the paint according to section 09 91 23 Painting – New interior works

**3.12 CLEANING**

- .1 With a clean sponge and water clean, without delay smudges and splashings of plaster.

**3.13 PROTECTION OF FINISHED WORKS**

- .1 During execution of the works of plaster coating, protect adjacent finished works with polyethylene sheets or construction paper.
- .2 Once works completed, remove from site excess materials, tools, equipment and rubbish that remain.

**3.14 CURING**

- .1 Allow coating to harden for 24 hours.
- .2 Maintain temperature between 15 and 21 degrees Celsius.
- .3 Maintain relative humidity rate between 40% and 60 %.

**END OF SECTION**