SECTION  – masonry cleaning

1. GENERAL
   1. SUMMARY
      1. Work in this Section includes the cleaning of existing unit masonry from surface contaminates including rust to new and existing masonry.
      2. Full scale cleaning of existing masonry will not be permitted until all required submittals, product information and methodology description are supplied to the Consultant and accepted in writing.
      3. Related Requirements:
         1. Section 04 20 00 – Unit Masonry.
   2. submittals
      1. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
      2. Submit Workplace Hazardous Materials Information Sheet (WHMIS) and Materials Safety Data Sheet (MSDS).
      3. Submit product information for cleaning materials used on the Project, and manufacturer's written cleaning instructions specific for surfaces being cleaned and substances being removed from surfaces.
      4. Submit written methodology describing cleaning process and rationale for cleaning techniques being used.
   3. mock-up
      1. Provide required Mock Ups in accordance with Section 01 45 00 – Quality Control.
      2. Conduct a series of tests to determine the most effective cleaning methods and products to remove surface contaminates.
      3. Conduct tests on building to determine effectiveness of moderate to high pressure wash cleaning methods, and to determine the following:
         1. Effective Water Pressure: Starting at 1000 kPa (145 PSI) and gradually increasing to 3000 kPa (435 PSI) to determine most effective pressure while not causing excessive erosion of masonry surface or mortar.
         2. Time Period: Gradually increasing time for water application to determine maximum amount of time required to clean without causing excessive water uptake into the masonry wall system.
         3. Spray Quality: Determine optimal flow rates, water temperature, types of nozzles, and spraying distances from wall surface.
         4. Pressure Drop: Test pressure at different heights to determine effect of line drop on effectiveness of water jets.
         5. Detergent: Test different pre-washes, detergents, and cleaning agents to determine most effective graffiti removal products for type of masonry on the Project.
      4. Conduct alternate test on building to determine effectiveness of brushing and spraying instead of pressure washing; follow similar testing regime for time, type of brushes and cleaning agents as noted above.
      5. Locate test patches in inconspicuous places as directed by Consultant, and as follows:
         1. Notification: Notify Consultant and Contractor 48 hours before commencing test cleaning of test patches.
         2. Test Patches:

Approximately 1 m2 (10 ft2) each, maximum of four (4) patches required.

Let the test patches dry three (3) days before inspection.

Use manufacturer's application instructions.

Keep test panels available for comparison throughout the cleaning project.

* + - 1. Precautions:

Stop work if cleaning has detrimental effect on any surrounding materials or plants.

Protect masonry openings from water or chemical infiltration during testing operations.

Collect, neutralize, and dispose of water and chemicals in accordance with applicable regulations and Canadian Environmental Assessment Act, (CEAA).

* + 1. Submit test results in accordance with 01 33 00 – Submittal Procedures, and include the following information:
       1. Description of most effective cleaning methods, pre-wash, detergent, and other cleaning materials.
       2. Type of compressor equipment, water pressure, tools, nozzle size and distance from masonry surface used for cleaning of each test patch.
  1. quality assurance
     1. Use only materials from one manufacturer and a single source of supply.
     2. Use only proprietary materials from the specified manufacturers; non proprietary or secret formulae, or materials having an unknown composition will not be permitted as these may contain harmful substances and may cause deleterious effects to surrounding material or masonry surfaces.
     3. A full description of all materials and chemicals employed in chemical cleaning must be submitted to the Consultant before commencing full scale cleaning.
  2. environmental requirements
     1. Do not use wet cleaning methods when there is threat of frost; or where drying time is not sufficient to prevent internal freezing of absorbed water arising from cleaning operations.
     2. Do not use chemical cleaners when temperature is below 10 deg C.
     3. Provide shading to wall to avoid cleaning in full, hot sunlight.
     4. Do not clean if there is risk of chemical spray being blown onto publicly accessible areas, cars or adjacent buildings and properties.
  3. protection
     1. Mask or seal vents, windows, and other openings, to prevent water entry.
     2. Mask wood, glass, and metal adjacent to masonry.
     3. Protect plants (if any) from excessive watering and chemicals.
     4. Hang sheeting material from scaffolding to enclose water spray.
     5. Workers shall wear eye, head, and face protection, and protective gloves, coveralls, boots, and filter mask.
     6. Protect storm water drains and surface drainage from being blocked by residue.
  4. existing conditions
     1. Report to Consultant conditions of deteriorated masonry or pointing found during cleaning.
     2. Record existing conditions, by means of photographs or video tape, before and after cleaning and advise Consultant if any potential complications.
  5. SCHEDULING OF WORK
     1. Coordinate cleaning work schedule with other work on site.
  6. MAINTENANCE MATERIALS AND INFORMATION
     1. Provide maintenance information in accordance with Section 01 33 00 – Submittal Procedures, indicating proper care of cleaners, cleaning instructions, locally available materials used to clean and maintain surfaces, and approximate recoating requirements.
     2. Provide one (1) 4L (1 gal) container of maintenance cleaner listed below, stored in location directed by Owner, in accordance with Section 01 77 19 – Closeout Requirements.

1. Products
   1. acceptable manufacturers
      1. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
         1. Dumond Chemicals Inc.
         2. PROSOCO.
   2. materials – general
      1. Water: Clean potable water free from contaminants; treat water that has high metal content before use in cleaning.
      2. Masking Materials: Polyethylene or strippable masking (butyl rubber spray).
   3. CLEANING AGENTS
      1. Materials must be tested for effectiveness before use on project and as follows:
         1. Materials may be changed to accommodate specific paint and stain types.
         2. A change to the contract will be considered where specified materials do not remove paint or stains on indicated substrates.
         3. Base material selection on materials specified in this Section.
      2. Masonry Cleaner: Low odor, bleach free compound, designed specifically as a restoration cleaner:
         1. Acceptable Materials:

Dumond Chemicals Inc; Safe n Easy Masonry Rust Remover.

PROSOCO; Sure Klean Restoration Cleaner.

* 1. TOOLS AND EQUIPMENT
     1. Use only brushes with natural or soft plastic bristles.
     2. Use only scrapers of wood or plastic.
     3. Use water pumps fitted with accurate pressure regulators and gauges capable of being preset and locked at maximum specified levels.
     4. Use gun equipped with pressure gauge at nozzle end.
     5. Use only plastic or non-ferrous metal piping and fittings.
     6. Use nozzles that give nebulized droplet spray.

1. Execution
   1. preparation
      1. Place safety devices and signs near work areas as indicated and directed.
      2. Seal or repair openings and joints where there is potential risk of water or chemical infiltration through the wall assembly.
      3. Cover surfaces not scheduled for cleaning, including adjoining surface where overspray may travel. Keep protection in place during removal process.
      4. Dry brush or scrape accumulations from walls, ledges, and cornices.
      5. Cover and protect surfaces and non masonry finishes with in areas scheduled for cleaning.
   2. EXECUTION OF CLEANING
      1. Moderate Pressure Water Cleaning:
         1. Pre wet masonry surface when necessary.
         2. Work from bottom of wall upwards.
         3. Remove dirt using water pressure and flow rate determined from mock up, using nozzle and distance to maximize removal, while avoiding prolonged wetting and excessive water penetration.
      2. Use previously tested chemical cleaners, following manufacturer's recommended dwell time, wetting, and rinsing procedures, within temperature ranges, and allowing sufficient time for wall to dry before freezing conditions occur that could damage wet and saturated masonry materials.
      3. Brushing and scraping; use only to supplement water washing.
      4. Soften and loosen heavy deposits with prolonged water spray, then brush. Remove thick encrustations with wooden or plastic scrapers.
      5. Notify Consultant and Contractor where chemical cleaners fail to remove paint or stains for further instructions; additional work will be considered as a change to the Contract where it can be shown that additional work could not have been reasonably determined by a detailed examination of the site prior to submission of bids.
   3. CLEAN UP
      1. Rinse off masonry until no indications of chemicals are present.
      2. Rinse from bottom to top and from top to bottom.
      3. Clean up work area as work progresses.
      4. Remove debris and waste from site at end of each workday.
      5. Clean and restore areas used for work to condition at least equal to that previously existing upon completion.

end of section