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**Part 1            General**

**1.1                REFERENCE STANDARDS**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI A108.1-13, Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, A136.1).
- .2 ASTM International (ASTM)
  - .1 ASTM A167-99(2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
  - .2 ASTM A1064/A1064M-18A Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
  - .3 ASTM C615/C615M-18e1; Standard Specification for Granite Dimension Stone.
- .3 CSA Group (CSA)
  - .1 CSA A165 SERIES-14 (R2019), CSA Standards on Concrete Masonry Units (Consists of A165.1, A165.2 and A165.3)
  - .2 CAN/CSA A179-14 (R2019), Mortar and Grout for Unit Masonry.
  - .3 CSA A370-14 (R2018), Connectors for Masonry.
  - .4 CAN/CSA A371-14 (R2019), Masonry Construction for Buildings.
  - .5 CSA G30.18-09 (R2019), Carbon Steel Bars for Concrete Reinforcement.
  - .6 CSA S304-14 (R2019) - Design of masonry structures.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Safety Data Sheets (SDS).
- .5 National Building Code of Canada (NBC) 2015

**1.2                ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for unit masonry products, mortar and grout, connectors, anchorage and reinforcing, and accessories. Include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Indicate sizes and sections of granite, arrangements of joints and bonding, anchoring, dowelling, and cramping.
  - .2 Each section of granite indicated on shop drawings must bear corresponding number marked on its back or bed.
- .4 Samples:

- .1 Submit sample for each finish product specified, complete sets of colour chips representing manufacturer's full range of available colours, textures, and patterns.
- .2 Submit samples of proposed granite façade and mortar.

### **1.3 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: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect masonry products from damages.
  - .3 Replace defective or damaged materials with new.

### **1.4 QUALITY ASSURANCE**

- .1 Test Reports: submit certified test reports including sand gradation tests in accordance with CAN/CSA-A179 showing compliance with specified performance characteristics and physical properties.
- .2 Mock-ups:
  - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
    - .1 Construct mock-up panel of exterior granite veneer construction 1200 x 1800 mm, showing colors and textures, use of reinforcement, ties, through wall flashing, weep holes, jointing, coursing, mortar, and quality of work.
    - .2 Mock-up used:
      - .1 To judge quality of work, substrate preparation, operation of equipment and material application.

### **1.5 COLD WEATHER REQUIREMENTS**

- .1 Supplement requirements of CAN/CSA A371 as follows:
  - .1 Maintain temperature of mortar between -5°C and 50°C until used.

### **1.6 HOT WEATHER REQUIREMENTS**

- .1 Supplement requirements of CAN/CSA A371 as follows:
  - .1 Protect freshly laid masonry from drying too rapidly by means of waterproof, non-staining coverings.

## **Part 2 Products**

### **2.1 MASONRY UNITS**

- .1 Standard concrete block units: to CSA A165.1.

- .1 Classification: H/15/C/M
- .2 Size: modular.
- .3 Dimensions (Nominal): 200 mm wide x 400 mm long x 200 mm high.
- .4 Special shapes: provide square units for exposed corners. Provide purpose-made shapes for lintels and bond beams. Provide additional special shapes as indicated.

## 2.2 REINFORCEMENT AND CONNECTORS

- .1 Bar reinforcement: steel to CSA G30.18, Grade 400, and stainless steel to ASTM A167.
- .2 Wire reinforcement: knurled wire to ASTM A1064/A1064M, truss type.
- .3 Connectors: to CSA A370.
  - .1 Corrosion resistance: to CSA A370
    - .1 Exterior: Level III.
    - .2 Interior: Level II.
  - .2 Ties:
    - .1 Proprietary tie: hot dipped galvanized to CSA A370 Table 5.2, steel finish.
  - .3 Anchors: to CSA A370.
    - .1 Conventional Anchors: type steel bolts with bent bar anchors, sized to suit application.
    - .2 Wedge Anchors: expansion anchors type wedge and bolt, sized to suit application.
    - .3 Sleeve Anchors: type sleeve and bolt, sized to suit application.
    - .4 Self-Contained Anchors: type double-glass/plastic vial system, with epoxy resin and hardener.
    - .5 Dovetail Anchors: bent steel strap, galvanized to CSA A370 Table 5.2 coated finish.
    - .6 Anchor Bolts: proprietary (patented) anchors, stainless steel.
    - .7 Repair anchors: epoxy adhesive type to suit application.
    - .8 Adhesive Anchors: proprietary systems, pre-mixed, self-contained system with double glass vial system to contain epoxy, consisting of resin, hardener and aggregate.

## 2.3 MORTAR AND GROUT

- .1 Mortar: to CAN/CSA A179.
  - .1 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
  - .2 Colour: ground coloured natural aggregates or metallic oxide pigments, to match existing and as selected by Departmental Representative.
- .2 Mortar Type:
  - .1 Exterior non-loadbearing walls and parapet walls: N based on proportion specifications.
  - .2 Interior non-loadbearing walls: Type N based on proportion specifications.

- .3 Granite: dry set Portland cement mortar: to ASNI A108.
  - .1 Portland cement: to CAN/CSA-A3000, type GU.
  - .2 Sand: to ASTM C144, passing 16 mesh.
  - .3 Latex additive: formulated for use in Portland cement mortar and thin set bond coat.
  - .4 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.
- .3 Mortar for foundation walls and other exterior masonry at or below grade: type M based on proportion specifications.
- .4 Following applies regardless of mortar types and uses specified above:
  - .1 Mortar for stonework: type N based on proportion specifications.
  - .2 Mortar for grouted reinforced masonry: type S based on proportion specifications.
- .5 Grout: to CAN/CSA A179, Table 3.

## 2.4 ACCESSORIES

- .1 Weep hole vents: purpose-made PVC.
- .2 Anchor Bolts: 12 mm diameter x 150 mm long with embedded ends bent 50 mm at 90 degrees, exposed ends threaded with washer and nut.
- .3 Embedded Flexible Flashings: Self-adhering sheet 0.76 mm thick consisting of rubberized asphalt compound banded to high density cross laminated polyethylene film, complete with manufacturer's recommended primer.
- .4 Loose steel lintels: in accordance with National Building Code of Canada (NBC) 2015, galvanized for exterior, prime painted for interior.

## 2.5 CUT GRANITE FAÇADE

- .1 Granite: to ASTM C615, colour and texture to match existing granite façade on building.
- .2 Finish: polished to match existing.
- .3 Anchors: stainless steel type 302 or 304.
- .4 Back up materials: refer to drawings.
- .5 Refer to drawings for cut granite locations.
- .6 Dimensions:
  - .1 90 mm thick x 300± mm high x 355 mm long
  - .2 90 mm thick x 300± mm high x 719 mm long
  - .3 90 mm thick x 300± mm high x 774 mm long
- .7 Provide samples for comparison to existing granite façade for review and acceptance of Departmental Representative.
- .8 All granite shall be obtained from quarries having adequate capacity and facilities to meet the specified requirements. Fabrication shall be by a firm equipped to process the materials promptly in accordance with the specifications.

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**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions.
  - .1 Proceed with installation only after unacceptable conditions have been remedied.

**3.2 INSTALLATION**

- .1 Do masonry work in accordance with CAN/CSA A371 except where specified otherwise.
  - .1 Bond: running stretcher bond with vertical joints in perpendicular alignment and centred on adjacent stretchers above and below.
  - .2 Coursing height: 200 mm for one block and one joint.
  - .3 Jointing: tool where exposed or where paint or other finish coating is specified to provide smooth compressed concave.
- .2 Build masonry plumb, level, and true to line, with vertical joints in alignment.
- .3 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

**3.3 CONSTRUCTION**

- .1 Exposed masonry:
  - .1 Remove chipped, cracked, and otherwise damaged units, in exposed masonry and replace with undamaged units.
  - .2 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects. Make cuts straight, clean, and free from uneven edges.
- .2 Building-in:
  - .1 Install masonry connectors and reinforcement where indicated on drawings.
  - .2 Build in items required to be built into masonry.
  - .3 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
  - .4 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.
  - .5 Install loose steel lintels centered over openings where indicated, with minimum 200 end bearing.
- .3 Concrete block lintels:
  - .1 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.
  - .2 End bearing: not less than 200 mm or as indicated on drawings.
- .4 Support of loads:
  - .1 Use 10 to 12.5 MPa concrete, where concrete fill is used in lieu of solid units, premixed type in accordance with CAN/CSA A179.

- .5 Provision for movement:
  - .1 Leave 6 mm space below shelf angles.
  - .2 Leave 6 mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.
  - .3 Built masonry to tie in with stabilizers, with provision for vertical movement.
  - .4 Build expansion and control joints where and as indicated.
- .6 Interface with other work:
  - .1 Cut openings in existing work as indicated.
  - .2 Openings in walls: approved by Departmental Representative.
  - .3 Make good existing work. Use materials to match existing.
- .7 Build in flashings in masonry in accordance with CAN/CSA A371.
  - .1 Install flashings under exterior masonry bearing on foundation walls, slabs, shelf angles, and steel angles over openings. Install flashings under weep hole courses and as indicated. Seal laps, penetrations, and terminations to resist water penetration.
  - .2 In cavity walls and veneered walls, carry flashings from front edge of masonry, under outer wythe, then up backing not less than 150 mm, and as follows:
    - .1 For self-adhesive flashing, apply primer and firmly press sheet against backing. Lap under air-barrier membrane. Seal penetrations with recommended sealant or mastic. Installation shall be free of wrinkles, fish-mouths and punctures.
    - .2 Provided turned up end dams minimum 50 mm high at ends of all flashings.
    - .3 For masonry backing embed flashing 25 mm in joint.
    - .4 For concrete backing, insert flashing into reglets.
    - .5 For wood frame backing, staple flashing to walls behind sheathing paper.
    - .6 For gypsum board backing, bond to wall using manufacturer's recommended adhesive.
  - .3 Lap joints 150 mm and seal with adhesive or mastic.
- .8 Install weep hole vents in vertical joints immediately over flashings, in exterior wythes of cavity wall and masonry veneer wall construction, at maximum horizontal spacing of 610 mm on center.
- .9 Place drainage mesh in cavity as indicated as construction progresses.

### 3.4

#### **GRANITE**

- .1 Cut granite to shape and dimensions, full to square, with jointing as indicated.
- .2 Join and bed granite pieces as indicated. Make joints maximum 10 mm thick.
  - .1 Saw or cut beds and joints full square back from face at least two thirds of piece thickness. From that point bed may fall under square 40 mm in 300 mm maximum.
  - .2 Make bed joints free of large depressions.

- .3 Supply granite pieces with scabbled or natural quarry split backs which may not vary more than 25 mm in 300 mm from true plane and not more than 25 mm from specified thickness.
- .4 Clean sawn backs and beds of rust stains and iron particles.
- .5 Execute moulded work from full size details. Make exposed arrises in true alignment and ease slightly to prevent snipping.
- .6 Cut granite for anchors, cramps, dowels. Provide Lewis pin holes in pieces which can not be manually handled. Do not cut holes in exposed surfaces.
- .7 Cut-in reglets for flashings where indicated.
- .8 Construction in accordance with CAN/CSA-A371.
- .9 Clean granite removing dirt or foreign matter from edges and surfaces. Do not use wire brushes.
- .10 Set granite plumb and accurately in position with anchors securely placed, as indicated on shop drawings. Orient stone veining in direction indicated on shop drawings.
- .11 Attach anchors to back-up wall and to granite. Fill anchor holes and encase anchors in mortar.
- .12 Make joints uniform and of indicated width. Place non-staining resilient cushions at least one joint width back from face to maintain joint width. Keep edges and faces aligned to respect indicated tolerances.
- .13 Use plastic weep hole vents.
- .14 Prevent soiling, chipping or defacing granite. Remove mortar droppings and wash clean.
- .15 Pointing: remove dirt and loose mortar from joints by using pressure air stream.
  - .1 Wet joints for mortar pointing. Dry joints for sealant pointing.
  - .2 Point joints with pointing mortar in 2 stages. Rub smooth with plastic tool to slightly concave joint.

### **3.5 REINFORCING AND CONNECTING**

- .1 Install masonry connectors and reinforcement in accordance with CSA A370, CAN/CSA A371 and CSA S304.1 unless indicated otherwise.
- .2 Prior to placing grout, concrete, and mortar, obtain Departmental Representative's approval of placement of reinforcement and connectors.

### **3.6 BONDING AND TYING**

- .1 Bond walls of two or more wythes using metal connectors in accordance with CAN/CSA A371, and as indicated.
- .2 Tie masonry veneer to backing in accordance with National Building Code of Canada (NBC) 2015, CAN/CSA A371, CSA S304.1 and as indicated.

### **3.7 MODIFICATIONS TO EXISTING MASONRY**

- .1 Match existing bond and coursing height of adjacent masonry to remain.

- .2 Tooth new masonry into existing masonry in run of wall and at intersections with existing partitions.
- .3 At new openings in masonry walls, remove units, clean and re-install rotated to conceal cut and expose finish surface.
- .4 Clean bond areas of adjacent masonry to remain, remove loose material and prepare masonry to receive new masonry toothed in.
- .5 Install reinforcement as necessary to provide continuity of reinforcing and stability between existing and new masonry work.
- .6 Provide repair anchors as necessary to stabilize existing masonry adjacent to and affected by the Work.

### **3.8 REINFORCED LINTELS AND BOND BEAMS**

- .1 Reinforce masonry lintels and bond beams as indicated.
- .2 Place and grout reinforcement in accordance with CAN/CSA A179, CAN/CSA A371.

### **3.9 GROUTING**

- .1 Grout masonry in accordance with CAN/CSA A179, CAN/CSA A371 and as indicated.

### **3.10 ANCHORS**

- .1 Supply and install metal anchors as indicated.

### **3.11 LATERAL SUPPORT AND ANCHORAGE**

- .1 Provide lateral support and anchorage in accordance with CSA S304.1 and as indicated.

### **3.12 SITE TOLERANCES**

- .1 Tolerances of CAN/CSA A371 apply.

### **3.13 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

### **3.14 PROTECTION**

- .1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect from wind-driven rain until masonry work is completed and protected by flashings or other permanent construction.
- .2 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.
- .3 Repair damage to adjacent materials caused by masonry products installation.

**END OF SECTION**