

**Part 1        General**

**1.1        REFERENCES**

- .1    ASTM International
  - .1    ASTM A653/A653M-13, Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2    ASTM C270-14a, Standard Specification for Mortar for Unit Masonry.
- .2    Canadian Standards Association (CSA)
  - .1    CAN/CSA A165 Series-14, CSA Standards on Concrete Masonry Units.
  - .2    CAN/CSA A179-14, Mortar and Grout for Unit Masonry.
  - .3    CSA A370-14, Connectors for Masonry.
  - .4    CAN/CSA A371-14, Masonry Construction for Buildings.
  - .5    CSA G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
  - .6    CSA S304-14, Design of Masonry Structures.
- .3    Underwriters' Laboratories of Canada (ULC)
  - .1    CAN/ULC S101-14, Standard Methods of Fire Endurance Tests of Building Construction and Materials.

**1.2        SUBMITTALS**

- .1    Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2    Product Data:
  - .1    Product Data: Including manufacturer's printed product literature, specifications, and data sheets illustrating products to be incorporated into project for specified products. Indicate masonry types, shapes, sizes, and textures.
  - .2    Mix proportions, sand analysis reports, and compressive strength reports on proposed mortar mixes.
- .3    Shop drawings:
  - .1    Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
  - .2    Reinforcing Steel: Indicate bar bending details, lists and placing drawings.
- .4    Samples:
  - .1    Provide one of each type of concrete masonry unit specified (face only) to show texture of interior finish.
- .5    Test Reports:
  - .1    Certified test reports showing compliance with specified performance characteristics and physical properties.

- .2 Submit laboratory test reports certifying compliance of masonry units and mortar ingredients with specification requirements.
- .6 Certificates: Provide certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

### **1.3 QUALITY ASSURANCE**

- .1 Comply with manufacturer's written data, including product technical bulletins, product installation instructions, and data sheets.
- .2 Perform masonry mortar and grout work in accordance with CSA A371 except as specified otherwise.
- .3 Connectors and joint reinforcement to conform to CSA A370.
- .4 Grout Specimens: Sample and test for compressive strength and slump.

### **1.4 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver masonry units on pallets, protected from road grime and moisture absorption due to exposure to rain or melting snow.
- .2 Unload and store on dry, level areas.
- .3 Remove plastic wrappings from masonry units, and cover with waterproof coverings that provide protection from elements but allow for air circulation.
- .4 Deliver cement, lime, and mortar in dry condition with manufacturer's label intact. Store under waterproof cover and protect from elements.
- .5 Waste Management: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

### **1.5 SITE CONDITIONS**

- .1 Ambient conditions: Assemble and erect components only when temperature is above 5°C.
- .2 Prevent work from freezing for at least 48 hours by enclosure, artificial heat, or other acceptable method.
- .3 Provide adequate bracing for masonry during construction and until permanent lateral supports are in place.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Standard concrete block units: To CAN/CSA A165 Series.
  - .1 Classification: H/15/A/M.
  - .2 Dimensions: As shown on Drawings.
  - .3 Special shapes:

- .1 Provide double bull-nosed units for exposed wall ends.
- .2 Provide bull-nosed units for exposed corners.

## **2.2 REINFORCEMENT**

- .1 Bar Reinforcement: CSA G30.18, Grade 400.
- .2 Joint Reinforcement: CAN/CSA A371.
- .3 Connectors: CSA A370 and CSA S304.1.

## **2.3 MORTAR MIXES**

- .1 Mortar: To CAN/CSA A179 requirements.
- .2 Type S Mortar: Mix to Property Specifications of ASTM C270:
  - .1 Compressive Strength: 1800 psi (12.4 MPa), minimum, at 28 days for laboratory mixed mortar with a flow of 110 plus/minus 5 percent.
  - .2 Water Retention: 75 percent, minimum.
  - .3 Air Content: Maximum 18 percent.
  - .4 Aggregate Ratio: Minimum 2.25 and maximum 3.5 times the sum of the separate volumes of cementitious materials.

## **2.4 GROUT MIXES**

- .1 Grout: To CAN/CSA A179 requirements and as indicated on structural drawings and specifications.
  - .1 Minimum Compressive Strength: 12.5 MPa at 28 days by cylinder test under Property specification.
  - .2 Grout Slump: Minimum 200 mm, maximum 250 mm.
  - .3 Maximum Aggregate Size: 13 mm diameter.

## **2.5 CLEANING COMPOUNDS**

- .1 Compatible with substrate and acceptable to masonry manufacturer for use on products.
- .2 Cleaning compounds compatible with concrete unit masonry and in accordance with manufacturer's written recommendations and instructions.

## **2.6 TOLERANCES**

- .1 Tolerances for standard concrete unit masonry tolerances in accordance with CAN/CSA A165.1, supplemented as follows:
  - .1 Maximum variation between units within specific job lot not to exceed 2 mm.
  - .2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.
  - .3 Out of square tolerance not to exceed 2 mm.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify surfaces and conditions are ready to accept work of this Section.

**3.2 PREPARATION**

- .1 Protect adjacent finished materials from damage due to masonry work.

**3.3 INSTALLATION**

- .1 General:
  - .1 Conform to CAN/CSA A371.
  - .2 Where mortar has started to harden at units requiring repositioning, remove and replace with fresh mortar.
  - .3 Masonry horizontal and vertical joints to be 10 mm thick except where adjustments are necessary to maintain bond pattern or to adjust coursing.
- .2 Concrete block units:
  - .1 Bond: Running.
  - .2 Coursing height: 200 mm for one block and one joint.
  - .3 Jointing: Concave.

**3.4 CONNECTORS AND REINFORCEMENT**

- .1 Supply and install masonry connectors and reinforcement in accordance with CSA A370, CSA A371, CSA/CSA A23.1, and CSA S304.1 unless indicated otherwise.

**3.5 GROUT PLACEMENT**

- .1 Grout masonry in accordance with CSA S304.1, CSA A371 and CSA A179 and as indicated.

**3.6 CONSTRUCTION**

- .1 Cull out masonry units with chips, cracks, broken corners, in accordance with CAN/CSA A165.
- .2 Build in miscellaneous items such as bearing plates, steel angles, bolts, anchors, inserts, sleeves and conduits.
- .3 Build around frames previously set and braced. Fill behind hollow frames within masonry walls with mortar or grout and embed anchors.
- .4 Fit masonry closely against electrical and plumbing outlets so collars, plates and covers overlap and conceal cuts.
- .5 Install movement joints and keep free of mortar where indicated.

- .6 Hollow Units: Spread mortar setting bed from outside edge of face shells. Gauge amount of mortar on top and end of unit to create full joints, equivalent to shell thickness. Avoid excess mortar.
- .7 Ensure compacted head joints. Use full or face-shell joint as indicated.
- .8 Tamp units firmly into place.
- .9 Do not adjust masonry units after mortar has set. Where resetting of masonry is required, remove, clean and reset units in new mortar.
- .10 Tool exposed joints concave; strike concealed joints flush.
- .11 After mortar has achieved initial set up, tool joints.
- .12 Do not interrupt bond below or above openings.

### **3.7 REPAIR/RESTORATION**

- .1 Upon completion of masonry, fill holes and cracks, remove loose mortar and repair defective work.

### **3.8 TOLERANCES**

- .1 Tolerances for standard concrete unit masonry tolerances in accordance with CAN/CSA A165.1, supplemented as follows:
  - .1 Maximum variation between units within specific job lot not to exceed 2 mm.
  - .2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.
  - .3 Out of square tolerance not to exceed 2 mm.

### **3.9 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning, supplemented as follows.
  - .1 Progress Cleaning: Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block. Clean wall surface with suitable brush or burlap.
  - .2 Waste Management: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

### **3.10 PROTECTION**

- .1 Brace and protect concrete unit masonry installation.

**END OF SECTION**