

**Part 1            General**

**1.1               SUBMITTALS**

- .1      Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2      Product Data:
  - .1          Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, limitations and colours.
- .3      Informational Submittals
  - .1          Submit manufacturer's installation instructions.
  - .2          Test reports and product certificates.

**1.2               QUALITY ASSURANCE**

- .1      Test Reports
  - .1          If requested, provide certified test reports showing compliance with specified performance characteristics and physical properties.
  - .2          If requested, submit laboratory test reports certifying compliance of masonry units and mortar with specification requirements.
- .2      Certificates: If requested, provide product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**1.3               QUALITY ASSURANCE**

**1.4               DELIVERY, STORAGE, AND HANDLING**

- .1      Deliver materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2      Deliver materials to job site in dry conditions.
- .3      Storage and Handling Protection:
  - .1          Keep materials dry until use.
  - .2          Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

**1.5               SITE CONDITIONS**

- .1      Ambient Conditions: assemble and erect components when temperatures are above 4 degrees C.
- .2      Weather Requirements: to CSA-A371.
- .3      Cold weather requirements:
  - .1          To CSA-A371 with following requirements.

- .1 Maintain temperature of mortar between 5 degrees C and 50 degrees C until batch is used or becomes stable.
- .2 Maintain ambient temperature of masonry work and its constituent materials between 5 degrees C and 50 degrees C.
- .3 Maintain temperature of masonry above 0 degrees C for minimum of 7 days, after mortar is installed.
- .4 Preheat unheated wall sections in enclosure for minimum 72 hours above 10 degrees C, before applying mortar.
- .4 Hot weather requirements:
  - .1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.
  - .2 Spray mortar surface at intervals and keep moist for maximum of three days after installation.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Masonry materials are specified elsewhere in related Sections

## **Part 3 Execution**

### **3.1 INSTALLERS**

- .1 Experienced and qualified masons to carry out erection, assembly and installation of masonry work.

### **3.2 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

### **3.3 EXAMINATION**

- .1 Examine conditions, substrates and work to receive work of this Section.
- .2 Examine openings to receive masonry units. Verify opening size, location, and that opening is square and plumb, and ready to receive work of this Section.
- .3 Verification of Conditions:
  - .1 Verify that:
    - .1 Substrate conditions which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions prior to installation of masonry.
    - .2 Field conditions are acceptable and are ready to receive work.

- .3 Built-in items are in proper location, and ready for roughing into masonry work.

### **3.4 PREPARATION**

- .1 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations.
- .2 Establish and protect lines, levels, and coursing.
- .3 Protect adjacent materials from damage and disfiguration.
- .4 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

### **3.5 INSTALLATION**

- .1 Do masonry work in accordance with CSA-A371 except where specified otherwise.
- .2 Build masonry plumb, level, and true to line, with vertical joints in alignment, respecting construction tolerances permitted by CSA-A371.
- .3 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

### **3.6 CONSTRUCTION**

- .1 Exposed masonry:
  - .1 Remove chipped, cracked, and otherwise damaged units, in accordance with CSA A-165, in exposed masonry and replace with undamaged units.
- .2 Jointing:
  - .1 Allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, joints true to line, compressed, uniformly concave joints where concave joints are indicated.
  - .2 Allow joints to set just enough to remove excess water, then rake joints uniformly to 6 mm depth and compress with square tool to provide smooth, compressed, raked joints of uniform depth where raked joints are indicated.
  - .3 Strike flush joints concealed in walls and joints in walls to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating.
- .3 Cutting:
  - .1 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects.
  - .2 Make cuts straight, clean, and free from uneven edges.
- .4 Building-In:
  - .1 Build in items required to be built into masonry.
  - .2 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.

- .3 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.
- .5 Wetting of bricks:
  - .1 Except in cold weather, wet bricks having initial rate of absorption exceeding 1 g/minute/1000 mm<sup>2</sup>; wet to uniform degree of saturation, 3 to 24 hours before laying, and do not lay until surface dry.
  - .2 Wet tops of walls built of bricks qualifying for wetting, when recommencing work on such walls.
- .6 Support of loads:
  - .1 Use 20 MPa concrete to Section 03 30 00 - Cast-in-Place Concrete, where concrete fill is used in lieu of solid units unless noted on drawings.
  - .2 Install building paper below voids to be filled with concrete; keep paper 25 mm back from faces of units.
- .7 Provision for movement:
  - .1 Leave 3 to 6 mm space below shelf angles.
  - .2 Leave 20 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.
- .8 Loose steel lintels:
  - .1 Install loose steel lintels. Centre over opening width.
- .9 Control joints:
  - .1 Construct continuous control joints as indicated.
- .10 Expansion joints:
  - .1 Build-in continuous expansion joints as indicated.
- .11 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.

### **3.7 SITE TOLERANCES**

- .1 Tolerances in notes to CSA-A371 apply.

### **3.8 FIELD QUALITY CONTROL**

- .1 Inspection and Testing will be carried out by Testing Laboratory designated by Departmental Representative in accordance with Section 01 29 83 – Payment Procedures for Testing Laboratory Services.
- .2 Notify inspection agency minimum of 24 hours in advance of requirement for tests.

**3.9 CLEANING**

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation and verification of performance of installation, remove surplus materials, rubbish, tools and equipment barriers.

**3.10 PROTECTION**

- .1 Protect masonry and other work from markings and other damage. Protect completed work from mortar droppings. Use non-staining coverings.
- .2 Air Temperature Protection: protect completed masonry as recommended in 1.5 SITE CONDITIONS
- .3 Temporary Bracing:
  - .1 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.
  - .2 Brace masonry walls as necessary to resist lateral forces during construction.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CAN/CSA A179-04, Mortar and Grout for Unit Masonry.
  - .3 CAN/CSA A371-04, Masonry Construction for Buildings.
  - .4 CAN/CSA-A3000-08, Cementitious Materials Compendium; CAN/CSA-A3002-08, Masonry and Mortar Cement.

**1.2 SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
  - .1 If requested, provide manufacturer's printed product literature, specifications and datasheets.
- .3 Samples: If requested, provide duplicate samples of specified coloured grout.
- .4 Informational Submittals (if requested):
  - .1 Submit two copies of WHMIS MSDS – Material Safety Data Sheets. Indicate VOC's mortar, grout and admixtures.
  - .2 Submit manufacturer's installation instructions.
  - .3 Product certificates.
  - .4 Test reports.

**1.3 QUALITY ASSURANCE**

- .1 Test Reports: If requested, provide certified test reports showing compliance with specified performance characteristics and physical properties.
  - .1 Submit laboratory test reports.
- .2 Certificates: If requested, provide product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Use same brands of materials and source of aggregate for entire project.
- .2 Cement:
  - .1 Portland Cement: to CAN/CSA-A3000.

- .2 Masonry Cement: to CAN/CSA-A3002 and CAN/CSA A179.
- .3 Mortar Cement: to CAN/CSA-A3002 and CAN/CSA A179.
- .4 Packaged Dry Combined Materials for mortar: to CAN/CSA A179.
- .3 Aggregate: supplied by one supplier. To CAN/CSA A179.
- .4 Water: clean and potable.
- .5 Lime: To CAN/CSA A179.
- .6 Mortar:
  - .1 To CSA A179.
  - .2 Use aggregate passing 1.18mm sieve where 6mm thick joints are indicated.
  - .3 White mortar: use white Portland cement, and white masonry cement to produce mortar type specified.
  - .4 Colour: ground coloured natural aggregates or metallic oxide pigments, use colouring admixture not exceeding 10% of cement content by mass, or integrally coloured masonry cement, to produce coloured mortar to match approved sample.
  - .5 Non-staining mortar: use non-staining masonry cement for cementitious portion of specified mortar type.
  - .6 Mortar type:
    - .1 Exterior, parapet, and Loadbearing Walls: type S mortar having a minimum strength of 12 MPa at 28 days.
    - .2 Non-Loadbearing Walls: type N mortar having a compressive strength of 5 MPa at 28 days. proportion specifications.
  - .7 Colour mortars:
    - .1 Incorporate colour and admixtures into mixes in accordance with manufacturer's instructions.
    - .2 Use clean mixer for coloured mortar.
  - .8 Pointing Mortar:
    - .1 Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into a ball. Allow to stand for not less than 1 hour nor more than 2 hours then remix with sufficient water to produce mortar of proper consistency for pointing.
- .7 Grout:
  - .1 To CSA A179.
  - .2 Mix grout to semi-fluid consistency.
  - .3 Do not use calcium chloride or chloride based admixtures.

## 2.2 SOURCE QUALITY CONTROL

- .1 Use same brands of materials and source of aggregates for entire project.

**Part 3            Execution**

**3.1                MANUFACTURER'S INSTRUCTIONS**

- .1        Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

**3.2                CONSTRUCTION**

- .1        Do masonry mortar and grout work in accordance with CAN/CSA A179 except where specified otherwise.

**3.3                CLEANING**

- .1        Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CAN/CSA A179-04, Mortar and Grout for Unit Masonry.
  - .3 CAN/CSA A370-04, Connectors for Masonry.
  - .4 CAN/CSA A371-04, Masonry Construction for Buildings.
  - .5 CAN/CSA G30.18-M92, Billet-Steel Bars for Concrete Reinforcement.
  - .6 CSA-S304.1-04, Design of Masonry Structures.
  - .7 CSA W186-M1990(R2016), Welding and Structural Metals.

**1.2 SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 If requested, provide manufacturer's printed product literature, specifications and datasheets.
- .3 Shop Drawings:
  - .1 Shop Drawings shall consist of bar bending details, lists and placing drawings.
  - .2 On placing drawings, indicate sizes, spacing, location, and quantities of reinforcement and connectors.
- .4 Informational Submittals:
  - .1 If requested, provide manufacturer's installation instructions.

**1.3 QUALITY ASSURANCE**

- .1 Test Reports: If requested, provide certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: If requested, product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Bar reinforcement: Steel to CAN/CSA A371 and CAN/CSA G30.18, Grade 400.
- .2 Connectors: to CAN/CSA A370 and CSA-S304.1.
- .3 Corrosion protection:

- .1 To CSA-S304.1.
- .2 In contact with brick: all connectors shall be hot-dipped galvanized.
- .4 Single Wythe Joint Reinforcement: ladder type:
  - .1 Cold drawn steel wire conforming to ASTM A82.
  - .2 Standard Joint Reinforcement consisting of 3.66mm (9ga) longitudinal wires and 3.66mm cross or diagonal wires.
  - .3 Yield Strength is 480MPa.
- .5 Anchors: to CAN/CSA A370.

## **2.2 FABRICATION**

- .1 Fabricate reinforcing in accordance with CAN/CSA-A23.1 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Fabricate connectors in accordance with CAN/CSA A370.
- .3 Obtain Departmental Representative's approval for locations of reinforcement splices other than shown on placing drawings.
- .4 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.
- .5 Ship reinforcement and connectors, clearly identified in accordance with drawings.

## **2.3 SOURCE QUALITY CONTROL**

- .1 Upon request, provide Departmental Representative with certified copy of mill test report of reinforcement steel, showing physical and chemical analysis, minimum 4 weeks prior to commencing reinforcement work.
- .2 Upon request inform Departmental Representative of proposed source of material to be supplied.

## **Part 3 Execution**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

### **3.2 GENERAL**

- .1 Supply and install masonry reinforcement in accordance with CSA-A371, CAN/CSA-A23.1 and CSA-S304.1 unless indicated otherwise.
- .2 Prior to placing concrete, obtain Departmental Representative's approval of placement of reinforcement.

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### **3.3 LADDER REINFORCING**

- .1 Install in accordance with CAN/CSA A370 and CAN/CSA A371.
- .2 Install horizontal joint reinforcement every second course. Every course for stack bond.
- .3 Place masonry joint reinforcement in first horizontal joints above and below openings. Extend minimum 400 mm each side of opening.
- .4 Place joint reinforcement continuous in first joint below top of walls.
- .5 Lap joint reinforcement ends minimum 150 mm.
- .6 Connect stack bonded unit joint corners and intersections with strap anchors 200 mm on centre.

### **3.4 REINFORCED LINTELS AND BOND BEAMS**

- .1 Reinforce masonry beams, masonry lintels and bond beams as indicated.
- .2 Place and grout reinforcement in accordance with CSA-S304.1, CAN/CSA A371, and CAN/CSA A179.
- .3 Support and position reinforcing bars in accordance with CAN/CSA A371.

### **3.5 GROUTING**

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

### **3.6 LATERAL SUPPORT AND ANCHORAGE**

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

### **3.7 MOVEMENT JOINTS**

- .1 Reinforcement will not be continuous across movement joints unless otherwise indicated.

### **3.8 FIELD BENDING**

- .1 Do not field bend reinforcement and connectors except where indicated or authorized by Departmental Representative.
- .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .3 Replace bars and connectors which develop cracks or splits.

### **3.9 FIELD TOUCH-UP**

- .1 Touch up damaged and cut ends of galvanized reinforcement steel and connectors with compatible finish to provide continuous coating.

**3.10            CLEANING**

- .1        Upon completion of installation, remove surplus materials, rubbish, tools, and equipment barriers.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-A165 Series-2004, CSA Standards on Concrete Masonry Units.
  - .2 CAN/CSA A371-04, Masonry Construction for Buildings.
  - .3 CSA S304.1-04, Design of Masonry Structures.

**1.2 SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

Product Data: If requested, provide product data, including manufacturer's printed data sheets.

**1.3 QUALITY ASSURANCE**

- .1 Test Reports
  - .1 If requested, provide certified test reports showing compliance with specified performance characteristics and physical properties.
  - .2 If requested, provide submit laboratory test reports certifying compliance of masonry units and mortar with specification requirements.
- .2 Certificates: If requested, product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Standard concrete block units: to CAN/CSA-A165 Series (CAN/CSA-A165.1).
  - .1 Classification: H/15/A/M.
  - .2 Size: Modular – Mason to confirm whether existing block is imperial or metric prior to ordering block.
  - .3 Special shapes: provide square units for exposed corners. Provide purpose-made shapes for lintels, beams and bond beams. Provide additional special shapes as indicated.

**2.2 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.

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**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify surfaces and conditions are ready to accept work of this Section.
- .2 Commencing installation means acceptance of existing substrates.

**3.2 PREPARATION**

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

**3.3 INSTALLATION**

- .1 Concrete block units:
  - .1 Bond: running unless noted.
  - .2 Coursing height: 200 mm for one block and one joint.
  - .3 Jointing:
    - .1 Concave where exposed or where paint or other finish coating is specified.
    - .2 Raked for specialty concrete masonry units.
    - .3 Flush joints: where concealed in walls and joints in walls to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating, and to height to suit resilient base where resilient base is applied to painted walls.
- .2 Special Shapes:
  - .1 Install special units to form corners, returns, offsets, reveals and indents without cut ends being exposed and without losing bond or module.
  - .2 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.
  - .3 End bearing: not less than 200 mm unless noted on drawings.

**3.4 REINFORCEMENT**

- .1 Install reinforcing in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

**3.5 CONNECTORS**

- .1 Install connectors in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

**3.6 MORTAR PLACEMENT**

- .1 Place mortar in accordance with Section 04 05 12 - Masonry Mortar and Grout.

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### **3.7 CONSTRUCTION**

- .1 Cull out masonry units, in accordance with CAN/CSA A165 and reviewed range of colour samples, with chips, cracks, broken corners, excessive colour and texture variation.
- .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 Solid Units: apply mortar over entire vertical and horizontal surfaces. Avoid bridging of airspace between brick veneer and backup wall with mortar.
- .8 Ensure compacted head joints. Use full or face-shell joint as indicated.
- .9 Tamp units firmly into place.
- .10 Do not adjust masonry units after mortar has set. Where resetting of masonry is required, remove, clean and reset units in new mortar.
- .11 After mortar has achieved initial set up, tool joints.
- .12 Do not interrupt bond below or above openings.

### **3.8 REPAIR/RESTORATION**

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

### **3.9 CLEANING**

- .1 Standard Block: 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.

**END OF SECTION**