

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 03 20 00 – Concrete Reinforcing.
- .2 Section 04 05 00 – Common Work Results for Masonry.
- .3 Section 04 26 13 – Masonry Veneer

**1.2 REFERENCES**

- .1 All references to be the latest edition as of the date indicated on the specifications.
- .2 ASTM International
  - .1 ASTM A496/A496M, Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
- .3 Canada Green Building Council (CaGBC)
  - .1 LEED Canada-NC Version 1.0, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum).
- .4 CSA International
  - .1 CAN/CSA-A165 SERIES, CSA Standards on Concrete Masonry Units.
  - .2 CAN/CSA-A179, Mortar and Grout for Unit Masonry.
  - .3 CAN/CSA-A370, Connectors for Masonry.
  - .4 CAN/CSA A371, Masonry Construction for Buildings.
  - .5 CSA G30.18, Carbon Steel Bars for Concrete Reinforcement.
  - .6 CSA S304.1, Design of Masonry Structures.

**1.3 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 masonry products and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29 - Health and Safety Requirements and 01 35 43 - Environmental Procedures.
    - .1 Indicate VOC's in g/L for epoxy coatings and galvanized protective coatings and touch-up products to be applied within building envelope.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by Professional Engineer registered or licensed in the Province of Manitoba, Canada.
  - .2 Shop drawings consist of bar bending details, lists and placing drawings.
  - .3 Placing drawings, indicate sizes, spacing, location and quantities of reinforcement and connectors.
- .4 Sustainable Design Submittals:

- .1 Submittals: in accordance with Section 01 35 20 - LEED Sustainable Requirements.
- .2 Construction Waste Management:
  - .1 Construction Waste Management: Develop Construction Waste Management Plan and Waste Reduction Workplan related to Work of this Section and in accordance with Section 01 35 20 LEED Sustainable Requirements and 01 74 19 Waste Management and Disposal.

#### **1.4 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 off the ground, in dry location and in accordance with manufacturer's written recommendations.
  - .2 Store and protect masonry products from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan and Waste Reduction Workplan related to Work of this Section and in accordance with Section 01 35 20 LEED Sustainable Requirements.
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding and packaging materials as specified Section 01 35 20 LEED Sustainable Requirements and 01 74 19 Waste Management and Disposal.

### **Part 2 Products**

#### **2.1 MASONRY UNITS**

- .1 Standard concrete block units: to CAN/CSA-A165 Series (CAN/CSA-A165.1).
  - .1 Classification: H/ 20/A/M.
  - .2 Size: modular.
  - .3 Special shapes: Provide purpose-made shapes for lintels and bond beams. Provide additional special shapes as indicated.

#### **2.2 REINFORCEMENT AND CONNECTORS**

- .1 Bar reinforcement: to CSA G30.18, Grade 400.
- .2 Wire reinforcement: to CAN/CSA-A371 and ASTM A496/A496M, truss type.
- .3 Connectors shall be corrosion resistant: to CAN/CSA-A370.

#### **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.
- .2 Mortar Type: S based on property specifications,

- .3 Following applies regardless of mortar types and uses specified above:
  - .1 Mortar for grouted reinforced masonry: type S based on property specifications.
- .4 Grout: to CAN/CSA-A179, Table 3.

## **2.4 ACCESSORIES**

- .1 Weep hole vents: purpose-made galvanized steel.
- .2 Nailing Inserts: 0.5 mm minimum thickness, galvanized.
- .3 Bolts: 12 mm diameter x 150 mm long with ends bent 50 mm at 90 degrees.

## **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 Visually inspect substrate in presence of Contract Administrator.
  - .2 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Contract Administrator.

### **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 all joints to provide smooth compressed concave surface.
- .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 over openings where indicated.
- .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 unless indicated otherwise on drawings.
- .4 Support of loads:
  - .1 Install building paper below voids to be filled with grout; keep paper 25 mm back from faces of units.
- .5 Provision for movement:
  - .1 Leave 3 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.
- .6 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. Coordinate with Architectural drawings and specifications.
  - .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 masonry backing embed flashing 25 mm in joint.
    - .2 For concrete backing, insert flashing into reglets.
    - .3 For wood frame backing, staple flashing to walls behind sheathing paper.
    - .4 For gypsum board backing, bond to wall using manufacturer's recommended adhesive.
  - .3 Lap joints 150 mm and seal with adhesive.
- .7 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 600 mm on centre.

### **3.4 REINFORCING AND CONNECTING**

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

### **3.5 BONDING AND TYING**

- .1 Tie masonry veneer to backing in accordance with NBC, CAN/CSA-A371, CSA S304.1 and as indicated.

### **3.6 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 and CSA S304.1.

**3.7 GROUTING**

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

**3.8 ANCHORS**

- .1 Supply and install metal anchors as indicated.

**3.9 LATERAL SUPPORT AND ANCHORAGE**

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

**3.10 SITE TOLERANCES**

- .1 Tolerances of CAN/CSA-A371 apply.

**3.11 FIELD QUALITY CONTROL**

- .1 Inspection and testing of masonry materials, mortar and grout will be carried out by an independent testing laboratory approved by Contract Administrator.
- .2 Pay for costs of tests as specified in Section 01 29 83 - Payment Procedures for Testing Laboratory Services.
- .3 Type, quantity and frequency of testing to be in accordance with CSA A179.

**3.12 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 - LEED Sustainable Requirements and Section 01 74 19 - Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**3.13 PROTECTION**

- .1 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.
- .2 Repair damage to adjacent materials caused by masonry products installation.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1        Section 03 20 00 – Concrete Reinforcing.
- .2        Section 04 04 99 – Masonry for Minor Works.
- .3        Section 04 26 13 – Masonry Veneer.

**1.2                REFERENCES**

- .1        All references to be the latest edition as of the date indicated on the specifications.
- .2        Canada Green Building Council (CaGBC)
  - .1        LEED Canada-NC Version 1.0, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum).
- .3        Canadian Standards Association (CSA International)
  - .1        CSA-A165 Series, Standards on Concrete Masonry Units.
  - .2        CSA A179, Mortar and Grout for Unit Masonry.
  - .3        CSA-A371, Masonry Construction for Buildings.
- .4        International Masonry Industry All-Weather Council (IMIAC)
  - .1        Recommended Practices and Guide Specification for Hot and Cold Weather Masonry Construction.

**1.3                ADMINISTRATIVE REQUIREMENTS**

- .1        Pre-installation meetings: Conduct pre-installation meeting one week prior to commencing work of this Section to:
  - .1        Verify project requirements.
  - .2        Verify substrate conditions.
  - .3        Co-ordinate products, installation methods and techniques.
  - .4        Sequence work of related sections.
  - .5        Co-ordinate with other building subtrades.
  - .6        Review manufacturer's installation instructions.
  - .7        Review masonry cutting operations, methods and tools and determine worker safety and protection from dust during cutting operations.
  - .8        Review warranty requirements.
- .2        Sequencing: sequence with other work in accordance with Section 01 32 16 - Construction Progress Schedules. Comply with manufacturer's written recommendations for sequencing construction operations.

**1.4                ACTION 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.
- .2 Provide two copies of Workplace Hazardous Materials Information System (WHMIS) - Material Safety Data Sheets (MSDS) in accordance with Section 01 35 29 - Health and Safety Requirements and 01 35 43 - Environmental Procedures.
- .3 Shop Drawings:
  - .1 Provide drawings stamped and signed by Professional Engineer registered or licensed in Province of Manitoba, Canada.
  - .2 Provide shop drawings detailing temporary bracing required, designed to resist wind pressure and lateral forces during installation.
- .4 Sustainable Design Submittals:
  - .1 LEED Submittals: in accordance with Section 01 35 20 - LEED Sustainable Requirements.

## **1.5 INFORMATION SUBMITTALS**

- .1 Certificates: provide manufacturer's product certificates certifying materials comply with specified requirements.
- .2 Test and Evaluation Reports:
  - .1 Provide certified test reports in accordance with Section 01 29 83 - Payment Procedures and Testing Laboratory Services.
  - .2 Test reports to certify compliance of masonry units and mortar ingredients with specified performance characteristics and physical properties.
  - .3 Provide data for masonry units, in addition to requirements set out in referenced CSA and ASTM Standards, indicating initial rates of absorption.
- .3 Installer Instructions: provide manufacturer's installation instructions, including storage, handling, safety and cleaning.
- .4 Manufacturer's Reports: provide written reports prepared by manufacturer's on-site personnel to include:
  - .1 Verification of compliance of work with Contract.
  - .2 Site visit reports providing detailed review of installation of work, and installed work.

## **1.6 CLOSEOUT SUBMITTALS**

- .1 Provide manufacturer's instructions for care, cleaning and maintenance of prefaced masonry units for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

## **1.7 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Manufacturer: capable of providing field service representation during construction and approving application method.
  - .2 Installer: experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
  - .3 Masons: company or person specializing in masonry installations with 5 years documented experience with masonry work similar to this project.

- .1 Masons employed on this project must demonstrate ability to reproduce mock-up standards.
- .2 Mock-ups:
  - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
  - .2 Construct mock-up panel of exterior masonry wall construction 1200 x 1800 mm showing masonry colours and textures, use of reinforcement, ties, through-wall flashing, weep holes, jointing, coursing, mortar and workmanship.
  - .3 Mock-up used:
    - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
  - .4 Construct mock-up where directed by Contract Administrator.
  - .5 Allow 24 hours for inspection of mock-up by Contract Administrator before proceeding with work.
  - .6 When accepted by Contract Administrator, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.
  - .7 Start work only upon receipt of written acceptance of mock-up by Contract Administrator.

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

- .1 Deliver materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .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.
  - .3 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding and packaging materials in accordance with Section 01 35 20 - LEED Sustainable Requirements and Section 01 74 19 - Waste Management and Disposal.

## **1.9 SITE CONDITIONS**

- .1 Ambient Conditions: assemble and erect components when temperatures are above 4 degrees C.
- .2 Weather Requirements: to CSA-A371 and to IMIAC - Recommended Practices and Guide Specifications for Hot and Cold Weather Masonry Construction.
- .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 it's constituent materials between 5 degrees C and 50 degrees C and protect site from windchill.
    - .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.
- .2 Hot weather requirements:
  - .1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.
  - .2 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry work is completed and protected by flashings or other permanent construction.
- .3 Spray mortar surface at intervals and keep moist for maximum of three days after installation.

## **Part 2 Products**

### **2.1 MANUFACTURERS**

- .1 Ensure manufacturer has minimum 5 years experience in manufacturing components similar to or exceeding requirements of project.

## **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.
  - .1 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
  - .2 Proceed with installation after unacceptable conditions have been remedied and after receipt of written approval from Contract Administrator.
- .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 concrete block.
    - .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.

- .2 Commencing installation means acceptance of existing substrates.

### **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.

### **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 Support of loads:
  - .1 Install building paper below voids to be filled with grout; keep paper 25 mm back from faces of units.
- .6 Provision for movement:
  - .1 Leave 3 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 Build masonry to tie in with stabilizers, with provision for vertical movement.
- .7 Loose steel lintels:
  - .1 Install loose steel lintels. Centre over opening width.
- .8 Control joints:
  - .1 Construct continuous control joints as indicated.
- .9 Movement joints:
  - .1 Build-in continuous movement joints as indicated.
- .10 Interface with other work:
  - .1 Cut openings in existing work as indicated.
  - .2 Openings in walls: to be reviewed by Contract Administrator.
  - .3 Make good existing work. Use materials to match existing.
  - .4 Coordinate the installation of embedded steel members as required to support top of masonry block wall.

### **3.7 SITE TOLERANCES**

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

### **3.8 FIELD QUALITY CONTROL**

- .1 Site Tests, Inspection:
  - .1 Perform field inspection and testing in accordance with Section 01 45 00 - Quality Control.
  - .2 Notify inspection agency minimum of 24 hours in advance of requirement for tests.
  - .3 Type, quantity and frequency of testing to be in accordance with CSA A179.

### **3.9 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Progress Cleaning: in accordance with related masonry sections.
- .3 Final 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.
- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 - LEED Sustainable Requirements and Section 01 74 19 - Waste Management and Disposal.
  - .1 Divert unused or damaged masonry units and glass block from landfill as specified in Section 01 35 20 - LEED Sustainable Requirements and Section 01 74 19 - Waste Management and Disposal.

**3.10 PROTECTION**

- .1 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 and in accordance with reviewed shop drawings to resist wind pressure and lateral forces during construction.
- .2 Moisture Protection:
  - .1 Keep masonry dry using waterproof, nonstaining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until completed and protected by flashing or other permanent construction.
  - .2 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each work day. Anchor securely in position.
  - .3 Air Temperature Protection: protect completed masonry as recommended in 1.10 SITE CONDITIONS.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 All materials, equipment, labour, and services necessary for the supply and installation of non-structural masonry units as indicated on the drawings and as specified herein.
- .2 The Work shall also include, but not necessarily be limited to the supply and installation of the following:
  - .1 Site mixed or pre-mixed mortar.
  - .2 Masonry joint reinforcement and ties.
  - .3 Pre-cast elements hand-set in mortar bed such as copings, sills, etc.
  - .4 Loose steel masonry ledgers and lintels.
  - .5 Movement joints, excluding caulking and sealant.
  - .6 Thru-wall sheet metal, membranes, flashings and venting.
  - .7 Cutting and fitting of veneer masonry to accommodate the Work of other trades during progress of masonry Work only to extent noted herein.
  - .8 Cleaning of exposed veneer masonry surfaces.
  - .9 Application of Clear Water Repellent on exposed exterior veneer masonry surfaces.
  - .10 Coordination with Work of other sections.
  - .11 Scaffolding and planks for masonry Work only.
  - .12 Provision of a masonry maintenance guide.
- .3 The Work shall also include building in or around or coordinating Work with products supplied by others, including the following:
  - .1 Firestopping and smoke sealing.
  - .2 Structural penetrations
  - .3 Pressed steel door frames.
  - .4 Access doors and frames.
  - .5 Louvres and vents.
  - .6 Piping and/or duct sleeves.
  - .7 Inserts, imbeds, and attachments for Work of other trades.
  - .8 Proprietary expansion control joints
  - .9 Caulking and sealants.
  - .10 Steel angle protection at masonry openings and corners as detailed on drawings (notably those subject to vehicle access).
- .4 This Section along with the drawings forms part of the Contract and is to be read, interpreted, and coordinated with all other parts.

**1.2 REFERENCES**

- .1 The latest applicable edition of following reference standards and codes shall govern all Work specified herein as appropriate:
  - .1 Canadian Standards Association (CSA)
    - .1 CAN/CSA A23.4-00, Precast Concrete - Materials and Construction (for precast concrete headers and sills, etc.).

- .2 CSA A82-06, Fired Masonry Brick made from Clay or Shale.
- .3 CSA A165.1-04, Concrete Block Masonry Units.
- .4 CSA A179-04, Mortar and Grout for Unit Masonry.
- .5 CSA A370-04, Masonry Connectors.
- .6 CSA A371-04, Masonry Construction for Buildings.
- .7 CSA G30.3-M1983 (R1998), Cold-Drawn Steel Wire for Concrete Reinforcement.
- .8 CSA-S304.1-04, Design of Masonry Structures.
- .9 CSA-A3000-03 Cementitious Material Compendium
- .2 Underwriters' Laboratories of Canada (ULC).
  - .1 CAN/ULC-S701-2001, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - .2 CAN/ULC-S702-1997, Thermal Insulation, Mineral Fibre, for Buildings.
  - .3 CAN/ULC-S705.1-2001, Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.
- .2 Canada Green Building Council (CaGBC)
  - .1 LEED Canada Reference Guide for Green Building Design and Construction 2009

### **1.3 QUALITY ASSURANCE**

- .1 The masonry Contractor shall be a member in good standing of the Manitoba Masonry Contractors Association, and be qualified under the Technical Masonry Certification (TMC) program.
- .2 The masonry Contractor shall have a minimum of five years of experience on projects of similar size and magnitude, and shall provide continuous active supervision while masonry Work is in progress.
- .3 Unless otherwise specified, construct all masonry Work in accordance with CSA-A371.
- .4 Cooperate and assist with inspections and testing and provide access to masonry Work as required.

### **1.4 DESIGN CRITERIA**

- .1 Design masonry connectors in accordance with requirements of CSA-A370.
- .2 Provide masonry veneer ties with type and spacing of ties to suit masonry materials and substrate conditions as specified herein. Tie spacings for concrete and masonry back-up systems are to be specified explicitly. Tie spacings for steel stud back-up must be verified with the Contract Administrator for exterior steel studs.
- .3 Provide vertical expansion joints in brick veneer masonry to accommodate thermal stresses and differential movement (shrinkage, creep, etc.) as shown on drawings. Width of joints to be the same as mortared joints. Refer to drawings for details and/or locations.
- .4 Provide horizontal movement joints as shown on drawings.
- .5 All such joints shall be caulked (rodded) and sealed by others in accordance with the requirements of Section 07 92 00 – Joint Sealants.

## **1.5 SUBMITTALS**

- .1 All submittals shall be in accordance with the requirements of Section 01 30 00 – Submittal Procedures.
- .2 Submit product literature indicating veneer types, shapes, sizes, textures, (e.g., smooth and wire cut), colours, etc. for review and selection.
- .3 Submit product literature, testing data, and samples of each type of masonry connector, accessory, and flashing for review and selection.
- .4 Submit documentation and proof of use of products required to meet environmental program certification [LEED] in accordance with requirements of Section 01 35 20 – LEED Sustainable Requirements at time of product delivery and prior to Substantial Performance.
- .5 At completion of Work, submit maintenance guide for masonry types installed.

## **1.6 MOCK-UPS**

- .1 In accordance with Section 01 30 00 – Submittal Procedures.
- .2 Prior to commencement of Work, construct a minimum 1200 mm (48") square sample panel of each type and colour of masonry veneer from job run showing wall ties, through wall flashing, weep holes, jointing, coursing, mortar colour, cleaning, water repellent, and Workmanship for review.

## **1.7 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- .1 Stack masonry units on pallets to avoid chipping, shrink wrap, and deliver to Site in dry condition. Store off the ground under waterproof cover and protect from the elements.
- .2 Deliver cement, lime, and mortar in dry condition with manufacturer's labels intact, and store under waterproof cover and protect from the elements. Protect pre-mixed mortar as well.
- .3 Store cementitious materials in accordance with requirements of CSA A5 and aggregate in accordance with requirements of CSA A23.1.
- .4 Protect all materials from damage during installation and replace masonry units that are stained or chipped, and materials that are affected by inadequate protection.

## **1.8 ENVIRONMENTAL REQUIREMENTS**

- .1 Conform to requirements of CSA-A371 during hot and cold weather and protect masonry against drying too rapidly.

## **1.9 PROTECTION:**

- .1 Protect masonry and Work of other sections from marking, mortar droppings and damage resulting from Work of this section by use of non-staining coverings and/or other means as required.
- .2 Coordinate with the Contractor to provide suitable enclosures and heating for masonry Work as required during construction.

- .3 Until completed and protected by flashings or other permanent construction, keep recently constructed masonry dry using waterproof, non-staining coverings that extend over walls and down sides enough to protect from wind driven rain. Cover top of all Work with polyethylene tarpaulin when Work is discontinued.

## **1.10 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 19 – Waste Management and Disposal.
- .2 Place materials defined as hazardous or toxic waste in designated containers.
- .3 Ensure emptied containers are sealed and stored safely for disposal away for public.
- .4 Use chemical hardeners that are non-toxic, biodegradable and have zero or low VOC's.
- .5 Dispose of surplus chemical and finishing materials in accordance with Federal, Provincial and Municipal regulations.

## **Part 2 Products**

### **2.1 MASONRY UNITS**

- .1 Provide clay veneer masonry units of sizes and types as specified herein and as noted on Architectural and Structural drawings with all masonry units from the same manufacturer and from the same production run for this project to ensure minimum colour and texture variation.
- .2 Clay Masonry Units: to CSA-A82.
  - .1 Manufacturer: Hebron Brick Company
    - .1 Size: Norman
    - .2 Nominal dimensions: 90 mm wide x 57 mm high x 290 mm long
    - .3 Texture: Velour
    - .4 Colours (refer to elevations for locations):
      - .1 Onyx Ironspot
      - .2 Sahara
  - .3 Provide solid units to avoid exposed cores when hollow brick veneer units are used.
  - .4 Provide manufacturer's standard shapes as required to maintain coursing / bonds and even faces.

### **2.2 SUBSTITUTIONS**

- .1 Refer to Section B7 – Substitutes of Bid Opportunity 748-2013.

### **2.3 MORTAR MATERIALS:**

- .1 Cement: Normal Portland Type GU cement to CSA-A3001
- .2 Masonry or Mortar Cement: to CSA A3002
- .3 Hydrated Lime: Type S to ASTM C-207.



- .4 Mortar Pigments: (for coloured mortar) inorganic mineral oxide, colour as selected by the Contract Administrator.
- .5 Mortar Aggregate: to CSA A179, washed, clean, sharp and free of organic materials.
- .6 Mortar Admixtures: As pre-approved by Contract Administrator
- .7 Water: Potable, free of deleterious matter and acids and alkalis.

## **2.4 MORTAR MIXES**

- .1 Use product brands and materials from the same source for the entire project.
- .2 Site Mixed Mortar: Type S mortar by proportion specification in accordance with CSA A179 requirements and complete with specified bonding agent where required.
- .3 Pre-Manufactured Mortar: quality-controlled, plant batched and mixed Type S mortar by property specification to CSA A179 complete with admixtures and with colour as selected by the Contract Administrator. Mortar to be either delivered to job Site for ready use as wet mortar or Site mixed in a portable powered and controlled silo/mixer or as pre-bagged dry mortar manufactured off-Site.
- .4 Colour Additives: as selected by the Contract Administrator from manufacturer's range and mixed to achieve a constant colour to match pre-approved sample and mock-up.
- .5 Site mix mortar in strict accordance with requirements of CSA A179.
- .6 Incorporate admixtures into mortar mix in strict accordance with manufacturer's instructions.
- .7 Where specified use bonding agent in mortar mix to increase bonding strength at copings, caps and exposed sills.
- .8 Use all Site mixed mortar within 2½ hours of mixing at temperatures under 25°C and within 1½ hours for temperatures over 25°C. Mortar may be re-tempered within 2 hours of mixing by using minimum amounts of water to replace water lost by evaporation.

## **2.5 MASONRY REINFORCEMENT**

- .1 Joint Reinforcement: galvanized flush or butt weld ladder type to CSA G30.3, minimum 3.6 x 3.6 x width 50 mm less than brick veneer unit width.

## **2.6 MASONRY TIES**

- .1 Ties: hot dipped galvanized type with corrosion resistance conforming to minimum requirements of CSA-A370 or better, complete with insulation retaining clip where applicable.

Note: The use of corrugated metal veneer ties is not permitted.

- .1 Ties to Steel Stud Walls: type connecting directly to face of steel studs through sheathing materials.
- .2 Ties to Masonry Walls: face mounted or joint embedded ties.
- .3 Ties to Concrete (mechanically fastened type): hot dipped galvanized or stainless steel self-drill expansion anchors to manufacturer's recommendations for specific use and substrate and to Contract Administrator's pre-approval.

- .2 The use of brick veneer ties to wood framed walls, concrete block, and concrete walls shall be in accordance with and reviewed by the Contract Administrator. This Work shall be co-ordinated with appropriate Sections of Work.
- .3 The use of brick veneer ties to exterior steel stud walls shall be in strict accordance with the requirements of exterior steel stud design criteria and certification requirements as reviewed/approved by the steel stud Engineer. Note that the type and final spacing of veneer ties to steel studs shall be verified and/or pre-approved by exterior steel stud designer before installation.

## **2.7 ACCESSORIES**

- .1 Shelf and Lintel Angles: hot dipped galvanized with sizes and connections as detailed on drawings and to the requirements of Section 05 50 00 – Metal Fabrications. Masonry Contractor to install loose lintel angles. Fixed lintels and shelf angles are supplied and installed by others.
- .2 Install bituminous membrane between galvanizing and mortar
- .3 Proprietary Support Systems: hot dipped galvanized components of following types supplied and installed by masonry Contractor:
  - .1 Adjustable Shelf Angles: angle, adjustable brackets, and fasteners of sizes to suit requirements as recommended by manufacturer.
  - .2 Concealed Lintel Support: internal plates, angles, rods, and fasteners of sizes to suit requirements as recommended by manufacturer.
  - .3 Exposed Flashing: minimum 24 gauge pre-finished galvanized steel in accordance with requirements of Section 07 62 00 – Sheet Metal Flashing and trim.
  - .4 Base Flashing: minimum 1.6 mm thick elastomeric sheet membrane to CGSB-37-GP-52M.
- .4 Cross-Cavity Flashing: assembled from both of the following:
  - .1 Metal: minimum 26 gauge galvanized steel.
  - .2 Elastomeric: minimum 1.6 mm reinforced elastomeric bitumen membraneNote: The use of PVC, aluminum, lead, and unfinished galvanized steel flashings are not approved.
- .5 Air Barrier Membrane: in accordance with requirements of Section 07 27 00 – Air Barriers.
- .6 Cavity Wall Insulation: in accordance with requirements of Section 07 21 13 – Board Insulation and 07 21 16 – Blanket Insulation.
- .7 Weep holes: BLOK-LOK #342W, manufactured from clear Butyrate or approved equal in accordance with B7.
  - .1 Tested in conformance with ASTM D 542, D 149, D 696 and D 257.

## **2.8 MASONRY CLEANING COMPOUNDS**

- .1 Masonry Cleaners: in accordance with masonry manufacturer's recommendations for type of units supplied. Note that muriatic acid is not permitted.

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## **2.9 WATER REPELLENT COATINGS**

- .1 Water Repellent Coating: clear, breathable, penetrating type with a manufacturer's minimum five year written warranty for water repellency. Coating to be compatible with masonry units and acceptable to masonry unit manufacturer for use with their products.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Examine all drawings and coordinate installation of masonry veneer with Contractor so that the Work can be performed with a maximum efficiency.
- .2 Examine all Site conditions and surfaces affecting the installation of veneer masonry such as openings, inserts and substrate surfaces. Report any potential problems to the Contractor.
- .3 Commencement of installation constitutes acceptance of existing conditions.

### **3.2 PREPARATION**

- .1 Establish all coursing and plumb lines and levels and protect from disturbance. All other lines and levels shall be established and maintained by the Contractor.
- .2 Coordinate all Work of this section with other related sections to establish continuity of building envelope elements.
- .3 Coordinate sequencing of air barrier membrane installation with adjacent trades to provide positive lapping of membrane edges around masonry openings. Install transition membranes as required.
- .4 Protect adjacent finished materials from damage due to masonry Work.
- .5 Touch-up damaged galvanizing and paint with a pre-approved coating.

### **3.3 INSTALLATION**

- .1 Construct brick veneer masonry Work in accordance with requirements and tolerances of CSA-A371, including variation from mean plane, plumb, level, and position as well as variation of wall opening sizes.
- .2 Draw units from 2 or more pallets simultaneously to blend colour ranges.
- .3 Lay brick veneer in running bond with accurately spaced courses, true to lines and levels and plumb throughout and particularly for location and sizing of openings and columns. Maintain bond pattern / module layout below and above openings, at corners, and between floors.
- .4 Install special units as may be required to form corners, returns, offsets, reveals and indents without cut ends being exposed and without losing bond pattern or module.
- .5 Brick veneer horizontal and vertical joints to be 10 mm thick except where adjustments are necessary to maintain the bond pattern or to adjust coursing, with a coursing height of three (3) courses in 200 mm, unless otherwise detailed on drawings.

- .6 Apply mortar to masonry surfaces and do not over furrow. Closure units must receive "double buttering" to obtain full head joints. Apply sufficient mortar to obtain full bed and head joints.
- .7 Use face shell bedding for hollow veneer units. Use full bedding for head and bed joints for solid veneer units.
- .8 Shove veneer units into place so as to eliminate voids in mortar joints and tamp firmly into place. Avoid mortar droppings by bevelling inside (cavity) edge of bed joint.
- .9 Do not reset masonry units after laying. Where resetting of masonry is required, remove and clean units and reset in new mortar.
- .10 Where brick veneer extends to underside of structural systems (concrete, ledger angles, etc.) provide a clear joint sufficient to accommodate structural deflection in accordance with drawings and ready to receive caulking and sealant as noted herein.
- .11 Tothing of brick units is not permitted unless otherwise pre-approved by Contract Administrator at specific locations. When tothing is necessary, ensure proper compaction of mortar.
- .12 At the intersection of brick veneer abutting dissimilar materials (concrete, stucco/steel stud walls, etc.) rake vertical joint 10 mm (3/8"), and tool square. Sealant shall be by others in accordance with Section 07 92 00 – Joint Sealants.
- .13 After mortar has initially "set up", tool all joints, wipe wall surfaces with a suitable brush or burlap to remove mortar protrusions and re-tool the joints.
- .14 Fill all holes and cracks, remove loose mortar, repair defective Work.
- .15 Exposed joints shall be concave, firmly pointed and compacted with round tooling bar. Use flush joints only where masonry units are not exposed to view.
- .16 Provide protection of Work from elements during Construction
- .17 Protection of Work following Construction shall be the responsibility of the Contractor (eg: between end of masonry Work and capping of walls).

### **3.4 BUILT-IN WORK**

- .1 Build in miscellaneous items such as bearing plates, loose angles, bolts, anchors, inserts, sleeves and conduits. Supply and lay-out of these items to be done by others.
- .2 Bed anchors of frames in mortar and fill frame voids with mortar all around as wall is erected.
- .3 Fit masonry closely against electrical and plumbing outlets so that collars, plates, and covers will overlap and conceal all cuts.
- .4 Install pre-cast concrete elements set in mortar where indicated.
- .5 Cooperate and check with all other trades for materials to be built into masonry and the exact location of openings that will be required. Provide cutting and fitting of masonry required for incorporation of such items during the progress of masonry Work only.

### **3.5 MASONRY CONNECTORS AND JOINT REINFORCING**

- .1 Install brick veneer ties / anchors, and fasteners in accordance with requirements of CSA A370.
- .2 Unless otherwise noted or indicated by design authority on structural drawings, provide masonry veneer ties in accordance with the following
  - .1 Provide Shop drawings
  - .2 Space all veneer ties at maximum of 600 mm (24") vertically and 800 mm (32") horizontally (as per engineered design) ensuring that not more than 0.24 square metres (2.67 square feet) of brick veneer wall contribute to the loading of a single tie and with the first tie near a vertical edge not more than 300 mm (12") from that edge. Space ties at a maximum of 400 mm (16") around all openings. Refer to drawings for unique tie spacing requirements.
  - .3 Use specified ties and fasteners
- .3 Locate veneer ties at the centre of the veneer,  $\pm 13$  mm (1/2").
- .4 For stack pattern, install horizontal reinforcement as per CSA-A371

### **3.6 MOVEMENT JOINTS**

- .1 Provide vertical and horizontal movement joints as shown on the drawings.
- .2 Keep joints free of mortar, and ready to receive back-up rod and sealant by others.
- .3 At underside of shelf angels, provide a gap of as required, and ready to receive back-up rod and sealant by others.
- .4 Back-up rod and sealant to be by others in accordance with the requirements of section 07 92 00 – Joint Sealants.

### **3.7 FLASHING**

- .1 Install flashing as shown on drawings and at the following locations:
  - .1 under brick, stone or concrete copings.
  - .2 under jointed masonry window sills.
  - .3 over masonry window heads and door openings.
  - .4 over shelf and lintel angles.
  - .5 at base of exterior masonry walls.
- .2 Integrate flashing with building envelope assemblies.
- .3 Turn-up flashing a minimum of 150 mm (6"), attach to back-up wall beneath membrane. Seal flashing where it abuts vertical interfaces or continues around inside or outside corners.
- .4 Create flashing end "dams" at both flashing ends at lintels, sills and at wall ends.
- .5 Ensure that all flashing is watertight and that all water is led out through weep holes. If flashing is pierced, waterproof these points carefully.
- .6 Install elastomeric bitumen membrane flashing 12mm back from the face of veneer masonry.

- .7 All architectural sheet metal Work to be done by others.

**3.8 WEEP HOLES**

- .1 Provide weep holes at a maximum spacing of 610 mm (24") o.c. horizontally at base of exterior walls and immediately above ledger angles, shelf angles, and horizontal flashings using proprietary device specified.
- .2 Weep hole to be completely clear of mortar down to the flashing.

**3.9 CUTTING AND PATCHING**

- .1 Do all cutting, fitting, drilling, patching, and making good of masonry veneer Work for other trades during progress of masonry Work. All exposed Work shall be clean, true and free from spalls, chips, and similar defects. Patched areas shall use brick and mortar matching in colour, texture, and plane. Such Work after completion of masonry Work shall be at additional cost.

**3.10 CLEANING**

- .1 Keep adjacent surfaces clean, dry, and free of mortar droppings and stains during laying using suitable protection.
- .2 Prior to full scale cleaning, confirm suitability of materials and methods by cleaning an inconspicuous test area.
- .3 Unless otherwise required by cleaning agent manufacturer, wet wall with clean water and flush off all loose dirt and mortar prior to cleaning.
- .4 Clean exposed masonry using specified cleaning agents in strict accordance with cleaning agent and masonry manufacturer's requirements.
- .5 When pressure washing, do not leave wand streaks.
- .6 Protect adjacent surfaces and Work from damage and staining during cleaning process.
- .7 Unless otherwise required by cleaning agent manufacturer, rinse all areas thoroughly with clean water to remove all cleaning solutions and residue.

**END OF SECTION**