Part 1 General

1.1 RELATED SECTIONS

.1 Cavity wall insulation: Section 07 21 13.

.2 Cavity wall air barrier membrane: Section 07 27 13.

.3 Joint sealants: Section 07 90 00.

1.2 REFERENCES

.1 Canadian Standards Association (CSA)
- .1 CAN/CSA-A179, Mortar and Grout for Unit Masonry.
- .2 CAN/CSA-A371, Masonry Construction for Buildings.

1.3 SUBMITTALS

.1 Shop drawings: submit shop drawings in accordance with Section E4 - Shop Drawings. Provide shop drawings for masonry, indicating masonry anchoring, reinforcing, connections. Indicate method of installation and connection to building components. Show location of control and movement joints.

.2 Manufacturer's instructions: submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to job site in dry condition.

.2 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

1.6 SITE ENVIRONMENTAL REQUIREMENTS

.1 Cold weather requirements:
- .1 Supplement Clause 5.15.2 of CAN/CSA-A371 with following requirements:
  - .1 Maintain temperature of mortar between 5°C and 50°C until batch is used or becomes stable.
  - .2 Maintain ambient temperature between 5ºC and 50º C and protect site from wind chill.
- .2 Maintain dry beds for masonry and use dry masonry units only. Do not wet masonry units in cold weather.
- .3 When air temperature is below -4°C protect and heat masonry to maintain air temperature above 0°C on both sides of walls during operations and for period of 24 hours after.
- .4 When air temperature is above -4°C erect windbreaks to prevent differential freezing of walls.

.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 flashing or other permanent construction.

Part 2 Products

2.1 MATERIALS

.1 Use same brands of materials and source of aggregate 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 PREPARATION

.1 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

3.3 INSTALLATION

.1 Do masonry work in accordance with CAN/CSA-A371 except where indicated otherwise.

.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.

.4 Make masonry courses uniform in height with both vertical and horizontal joints of equal and uniform thickness.

.5 Keep air space in cavities and weep holes free of mortar droppings and other debris to allow free air movement and positive moisture drainage to exterior.

.6 Lay masonry units in full mortar bed. Do not shift or tap units after mortar has taken initial set. Where adjustments must be made, remove mortar and replace with fresh supply.

.7 Bed joints evenly and fill solidly with mortar. Rock masonry into place at closures with head joints thrown against adjacent masonry units.

.8 Where new masonry abuts set masonry, clean existing surfaces and dampen if necessary to obtain bond.

.9 Loose steel lintels:

.1 Install loose steel lintels. Centre over opening width.

3.4 CONSTRUCTION

.1 Exposed masonry:

.1 Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

.2 Jointing:
- .1 Allow joints to set just enough to remove excess water, then tool with jointer to provide smooth, compressed, uniform joints.
- .2 Use round jointer to provide concave joints where concave joints are indicated.
- .3 Rake joints uniformly to 6 mm depth and compress with square tool to raked joints of uniform depth where raked joints are indicated.
- .4 Strike flush all joints concealed in walls and joints in walls to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating.
- .5 Point or replace defective mortar as required or where directed by Contract Administrator.

.3 Cutting:
- .1 Cut out neatly for electrical switches, outlet boxes, and other recessed or built-in objects.
- .2 Make cuts straight, clean, and free from uneven edges.
- .3 Use masonry saw where necessary.

.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 Use 20 MPa concrete to Section 03 30 00 - Cast-In-Place Concrete where concrete fill is used in lieu of solid units.
- .2 Install building paper below voids to be filled with concrete; keep paper 25 mm back from faces of units.

.6 Provision for movement:
- .1 Leave 9 mm space below shelf angles to allow for movement.
- .2 Leave space between top of non-load bearing walls and partitions and structural elements, minimum 25 mm or as indicted on drawings. Do not use wedges.
- .3 Built masonry to tie in with stabilizers, with provision for vertical movement.
- .4 Loose steel lintels:
  - .1 Install loose steel lintels. Centre over opening width.

.7 Control joints:
- .1 Construct continuous control joints.
- .2 Provide continuous vertical control joints in masonry where indicated but at no more than 6 m on centre maximum spacing.
- .3 Fill control joints with expansion joint filler and joint sealants as specified in Section 07 90 00 - Joint Sealing.

.8 Expansion joints:
- .1 Construct continuous expansion joints.
- .2 Provide continuous expansion joints where indicated and at building expansion joints.
- .3 Fill expansion joints with expansion joint filler and joint sealants as specified in Section 07 90 00 - Joint Sealing.

.9 Provisions for other trades:
- .1 Provide openings in masonry walls where required or indicated. Accurately locate chases and openings and neatly finish to the required sizes.

.2 Where masonry encloses conduit or piping, bring to proper level indicated and as directed.

.3 Do not cover pipe or conduit chases or enclosures until advised that work has been inspected and tested.

3.5 FIELD QUALITY CONTROL

.1 Test masonry mortar and grout in accordance with CSA A179.

3.6 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

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

3.7 PROTECTION

.1 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Masonry work and materials specified under related sections in Section 04 05 00 – Common Work Results for Masonry.

1.2 REFERENCES

.1 Canadian Standards Association (CSA)
- .1 CAN/CSA-A179, Mortar and Grout for Unit Masonry.

Part 2 Products

2.1 MATERIALS

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

.2 Mortar and grout: CAN/CSA-A179.

.3 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.

.4 Color: ground colored natural aggregates or metallic oxide pigments. Color selected by Contract Administrator. Use coloring admixture not exceeding 10% of cement content by mass, or integrally colored masonry cement, to produce colored mortar to match approved sample.

.5 Grout: to CAN/CSA-A179, Table 3.

2.2 MORTAR TYPES

.1 Mortar for exterior masonry above grade:
- .1 Load bearing: Type S based on Proportion specifications.
- .2 Non-load bearing: Type N based on Proportion specifications.
- .3 Parapet walls, unprotected walls: Type S based on Proportion specifications.

.2 Mortar for interior masonry:
- .1 Load bearing: Type S based on Proportion specifications.
- .2 Non-load bearing: Type N based on Proportion specifications.

.3 Following applies regardless of mortar types and uses specified above:
- .1 Mortar for concrete brick: Type O based on Proportion specifications.
- .2 Mortar for grouted reinforced masonry: Type S based on Proportion specifications.

2.3 MIXING

.1 Mix grout to semi-fluid consistency.

.2 Colored mortar:
- .1 Incorporate color and admixtures into mixes in accordance with manufacturer's instructions.
- .2 Accurately and consistently measure all ingredients, including water, to consistently produce batches matching approved samples.

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 Perform 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, equipment and barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Masonry work and materials specified under related sections in Division 4 - Masonry.

1.2 REFERENCES

.1 Canadian Standards Association (CSA)
- .1 CAN/CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .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 G30.14 Formed Steel Wire For Concrete Reinforcement.
- .6 CSA G30.18 Billet-Steel Bars for Concrete Reinforcement.
- .7 CSA-S304.1, Design of Masonry Structures.
- .8 CSA-W186 Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.3 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section E4.

.2 Shop drawings consist of bar bending details, lists and placing drawings.

.3 On placing drawings, indicate sizes, spacing, location and quantities of reinforcement and connectors.

Part 2 Products

2.1 REINFORCEMENT

.1 Bar reinforcement: to CAN/CSA-A371 and CSA G30.18, Grade 400.

.2 Wire reinforcement: to CAN/CSA-A371 and CSA G30.14, truss type. Include prefabricated corners and intersections.

.3 Corrosion protection: to CSA-S304.1, galvanized to CAN/CSA-A370.

2.2 CONNECTORS

.1 Connectors: to CAN/CSA-A370 and CSA-S304.1 and as specified below.

.2 Exterior masonry veneer on concrete block backup walls: connector assembly consisting of galvanized steel connector plate and V-tie and plastic insulation support.
- .1 Acceptable material: Fero Block Shear Connector Assembly.

.3 Exterior masonry veneer on cast-in-place concrete backup walls: connector assembly consisting of galvanized steel connector plate and V-tie and plastic insulation support.
- .1 Acceptable material: Fero Rap-Tie System.

.4 Corrosion protection: to CSA-S304.1 galvanized to CAN/CSA-A370.

.5 Fasteners:
- .1 Masonry and concrete: wedge type anchors, stainless steel finish. Of sufficient length to penetrate minimum 25 mm into solid substrate.

.1 Acceptable material: Gripcon Perma-Grip, Rawl Spike.

2.3 FABRICATION

.1 Fabricate reinforcing in accordance with CAN/CSA-A23.1 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Ontario.

.2 Fabricate connectors in accordance with CAN/CSA-A370.

.3 Obtain Contract Administrator approval for locations of reinforcement splices other than shown on placing drawings.

.4 Upon approval of Contract Administrator, weld reinforcement in accordance with CSA-W186.

.5 Ship reinforcement and connectors, clearly identified in accordance with drawings.

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 GENERAL

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

.2 Supply and install additional reinforcement to masonry as indicated.

3.3 BONDING AND TYING

.1 Bond walls of two or more wythes using metal connectors in accordance with NBC, CSA-S304.1, CAN/CSA-A371 and as indicated.

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

.3 Coordinate spacing with cavity wall insulation to ensure connector plates are centred on horizontal joints of insulation boards.

.4 Ensure fasteners are tight and secure. Remove and replace any stripped or loose fasteners.

.5 Install plastic insulation supports over connector plates to hold insulation tight to backup walls. Provide one insulation support at each connector plate.

3.4 REINFORCED LINTELS AND BOND BEAMS

.1 Reinforce masonry lintels and bond beams.

.2 Place and grout reinforcement in accordance with CSA-S304.1, CAN/CSA-A371, and CAN/CSA-A179.

3.5 GROUTING

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

3.6 ANCHORS

.1 Supply and install metal anchors as indicated.

3.7 LATERAL SUPPORT AND ANCHORAGE

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

3.8 MOVEMENT JOINTS

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

3.9 FIELD BENDING

.1 Do not field bend reinforcement and connectors except where indicated or authorized by Contract Administrator.

.2 When field bending is authorized, bend without heat, applying a slow and steady pressure.

.3 Replace bars and connectors that develop cracks or splits.

3.10 FIELD TOUCH-UP

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

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Masonry work and materials specified under related sections in Division 4 - Masonry.

1.2 REFERENCES

.1 Canadian Standards Association (CSA)
- .1 CAN/CSA-A165 Series, CSA Standards on Concrete Masonry Units (Consists of A165.1, A165.2 and A165.3).

Part 2 Products

2.1 MATERIALS

.1 Standard concrete masonry units: to CAN/CSA-A165 Series (A165.1).
- .1 Classification: H/15/A/M.
- .2 Size: modular
- .3 Special shapes:
  - .1 Square units for exposed corners.
  - .2 Purpose made shapes for lintels and bond beams.
  - .3 Provide additional special shapes as indicated.

Part 3 Execution

3.1 INSTALLATION

.1 Concrete block units.
- .1 Bond:
  - .1 Standard and fire rated concrete block: running stretcher.
- .2 Coursing height:
  - .1 Full height units: 200 mm for one block and one joint
  - .2 Half-high units: 100 mm for one block and one joint.
- .3 Jointing:
  - .1 Standard block and fire rated block: concave where exposed.
  - .2 Struck flush where concealed.

.2 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 as indicated on drawings.

3.2 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 and finally by brushing.

.2 Do not use cleaning agents that will affect or inhibit application of clear sealers and anti-graffiti coatings applied by others.

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Masonry work and materials specified under related sections in Division 4 - Masonry.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)
  .1 ASTM C568 Specification for Limestone Building Stone

.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-37.2 - Emulsified Asphalt, Mineral-Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings.

1.3 SHOP DRAWINGS

.1 Submit shop drawings in accordance with E4.

.2 Indicate sizes and sections of cut stone, arrangements of joints and bonding, anchoring, doweling and cramping.

.3 Indicate mortar ingredients, mortar mixes and strength for mortar used for setting and pointing limestone work.

1.4 DELIVERY, STORAGE, HANDLING

.1 Deliver stone to site and store where directed, off ground and protected from dirt and damage. Deliver stone in setting sequence.

.2 Handle stone carefully with proper procedures and equipment. Avoid chipping edges, corners, or marring face finishes.

1.5 PROJECT/SITE CONDITIONS

.1 Inspect site conditions and verify that other work affecting stonework is properly installed and ready to receive stonework.

.2 Verify dimensions by taking site measurements and recording such measurements on shop drawings.

Part 2 Products

2.1 MATERIALS

.1 Limestone veneer masonry: (South End Hauled Wastewater Building)
  .1 Size and Bond: 100 x 669, Bond: Soldier course. Color grey to match UV Building
  .2 Gillis Quarries Limited, Winnipeg, Manitoba, Canada.

.2 Red veneer masonry: (North End Hauled Wastewater and Leachate Building)
  .1 Size and Bond: 100 x 200, Bond: Smooth Face.

.2 To ASTM C 568, category II, medium density as quarried and supplied by Gillis Quarries Limited, Winnipeg, Manitoba, Canada.

.3 Free of defects which would affect appearance or durability. Quarry seams shall be well back from finished face. Fossils and other natural markings permitted only to the extent that they do not disfigure finished appearance or durability. Loose or large fossils not permitted.

.3 Asphalt emulsion: to CAN/CGSB-37.2.

.4 Sealants: as specified in Section 07 90 00 - Joint Sealers.

Part 3 Execution

3.1 CUTTING

.1 Cut stone to shape and dimensions and full to square with jointing as indicated. Dress exposed faces true. Cut stone to lay on its natural quarry bed.

.2 Make beds and joints 6 mm thick and at right angles to face.

.3 Back-check stone contacting structural members as indicated. Allow minimum of 25 mm clearance between back of stone and steel and concrete structural members. Shape beds of stone resting on structural work to fit supports.

.4 Cut stones for anchors, cramps, dowels and support systems.

.5 Do not cut holes in exposed surfaces.

3.2 FINISH

.1 Exposed surfaces of stone split faced sawn finish

3.3 SETTING

.1 Apply asphalt emulsion to concrete surfaces, shelf angles, structural steel supports against which stone is to be applied.

.2 Waterproof exterior slabs on back prior to setting.

.3 Clean stone exposed surfaces by washing with stiff fibre brush and water.

.4 Drench dry stones with clean water just before setting.

.5 Install anchors, dowels and cramps.

.6 Set stones plumb, true, level in full bed of mortar with vertical joints slushed full except where otherwise specified. Completely fill anchor, dowel and lifting holes.

.7 Place spacers under stones to maintain joint thickness. Set heavy stones and projecting courses after mortar in courses below has hardened sufficiently to support weight.

.8 Prop and anchor projecting stones until wall above is set.

.9 Use soaked softwood wedges to support stone in proper alignment until mortar has set. Remove wedges when dry and without breaking them off, fill voids with pointing mortar.

.10 Tool joints after initial set has occurred.

.11 Sponge stone face along joints and remove droppings and splashed mortar immediately.

3.4 CLEANING

.1 At end of each working day brush off loose mortar from stone face.

.2 At completion wash stonework with stiff-fibre brushes and clean water.

.3 Graffitti coating – apply in accordance with section 09 96 23.

END OF SECTION