

1. GENERAL

1.1. RELATED REQUIREMENTS

- .1 Section 04 05 12 – Masonry Mortar & Grout
- .2 Section 04 05 19 – Masonry Anchorage & Reinforcing
- .3 Section 04 22 00 – Concrete Unit Masonry

1.2. REFERENCES

- .1 Canada Green Building Council (CaGBC)
 - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-A165 Series-[04], Standards on Concrete Masonry Units.
 - .2 CSA A179-[04], Mortar and Grout for Unit Masonry.
 - .3 CSA-A371-[04], Masonry Construction for Buildings.
- .3 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: comply with Section 01 31 19 - Project Meetings. Conduct pre-installation meeting one week prior to commencing work of this Section to:
 - .1 Verify project requirements, including mock-up 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 sub trades.
 - .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.
- .3 Scheduling: schedule with other work in accordance with Section 01 32 16 - Construction Progress Schedules.

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)
- .3 Samples:
 - .1 Provide samples as follows:
 - .1 Two of each type of concrete masonry unit, clay tile specified.
 - .2 Two cured, and coloured samples of mortar and grout, illustrating mortar colour and colour range, supplemented with specific requirements in Section 04 05 12 - Masonry Mortar and Grout.
 - .3 Samples: used for testing and when accepted become standard for material used.

- .4 Shop Drawings:
 - .1 Provide drawings stamped and signed by Professional Engineer registered or licensed in the Province of Manitoba, Canada.
 - .2 Provide shop drawings detailing temporary bracing required, designed to resist wind pressure and lateral forces during installation.
- .5 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. EXTRA MATERIALS

- .1 Provide manufacturer's instructions in accordance with Section 01 78 00 - Closeout Submittals covering maintenance requirements and parts catalogue, with cuts and identifying numbers.

1.8. 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 Mockups:
 - .1 Construct mockups in accordance with Section 01 45 00 – Quality Control.
 - .2 Construct mockup panel of exterior masonry wall construction 1200x1800mm showing masonry colours and textures, use of reinforcement, ties, through-wall flashing, weep holes, jointing, coursing, mortar and workmanship.
 - .3 Mockup used to judge workmanship, substrate preparation, operation of equipment

- and material application.
- .4 Construct mockup where directed by Contract Administrator.
- .5 Allow 24 hours for inspection of mockup by Contract Administrator before proceeding with Work.
- .6 When accepted by Contract Administrator, mockup will demonstrate minimum standard for this Work. Mockup may remain as part of finished Work.
- .7 Start Work only upon receipt of written acceptance of mockup by Contract Administrator.

1.9. 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 manufacturers 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 manufacture 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.

1.10. SITE CONDITIONS

- .1 Ambient Conditions: assemble and erect components when temperatures are above 5 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 wind-chill.
 - .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.

2. PRODUCTS

2.1. MANUFACTURERS

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

2.2. MATERIALS

- .1 Masonry materials are specified elsewhere in related Sections:
 - .1 Section 04 22 00 – Concrete Unit Masonry

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 that 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

- 6mm 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 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 mm²: 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 40 MPa concrete to Section 03 30 00 - Cast-in-Place Concrete, where concrete fill is used in lieu of solid units.
 - .2 Use grout to CSA A179 where grout is used in lieu of solid units.
 - .3 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 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.
 - .8 Loose steel lintels:
 - .1 Install loose steel lintels. Centre over opening width.
 - .9 Control joints:
 - .1 Construct continuous control joints as indicated.
 - .10 Movement joints:
 - .1 Build-in continuous movement joints as indicated.
 - .11 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.

- .2 Manufacturer's Services:
 - .1 Schedule site visits to review work at stages listed:
 - .1 After delivery and storage of products, and when preparatory work on which work of this Section depends is complete, but before installation begins.
 - .2 Twice during progress of work at 25% and 60% complete.
 - .3 Upon completion of work, after cleaning is carried out.
 - .2 Obtain reports within three days of review and submit immediately to Contract Administrator.

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 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 workday. Anchor securely in position.
 - .3 Air Temperature Protection: protect completed masonry as recommended in 1.10 SITE CONDITIONS.

END OF SECTION.

1. GENERAL

1.1. RELATED REQUIREMENTS

- .1 Section 04 22 00 – Concrete Unit Masonry: Installation of mortar and grout.
- .2 Section 08 11 00 – Metal Doors and Frames: Grouted steel doorframes.

1.2. REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A23.1/A23.2-[04], 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-[03], Cementitious Materials Compendium; CAN/CSA-A3002-[03], Masonry and Mortar Cement.

1.3. ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide manufacturer's printed product literature, specifications and datasheets. Include product characteristics, performance criteria, and limitations.
- .3 Samples: provide unit samples supplemented as follows:
 - .1 Provide two samples of mortar, illustrating mortar colour and colour range.
- .4 Manufacturer's Instructions: Provide manufacturer's installation instructions.

1.4. QUALITY ASSURANCE

- .1 Test Reports: certified test reports including sand gradation tests in accordance with CAN/CSA A179 showing compliance with specified performance characteristics and physical properties, and in accordance with Section 04 05 00 - Common Work Results for Masonry
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 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, store and handles masonry mortar and grout materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:
 - .1 Deliver prepackaged, dry-blended mortar mix to project site in labelled plastic-lined bags each bearing name and address of manufacturer, production codes or batch numbers, and colour or formula numbers.
 - .2 Maintain mortar, grout and packaged materials clean, dry, and protected against dampness, freezing, traffic and contamination by foreign materials.

1.6. SITE CONDITIONS

- .1 Ambient Conditions: maintain materials and surrounding air temperature to:
 - .1 Minimum 10 degrees C prior to, during, and 48 hours after completion of masonry work.
 - .2 Maximum 32 degrees C prior to, during, and 48 hours after completion of masonry work.
- .2 Weather Requirements: CAN/CSA A371 International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Hot and Cold Weather Masonry Construction.

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, Type GU - General use hydraulic cement gray colour.
 - .1 Use low VOC products in compliance with SCAQMD Rule 1168.
 - .2 Masonry Cement: to CAN/CSA-A3002 and CAN/CSA A179, Type S.
 - .1 Mortar Cement: to CAN/CSA-A3002 and CAN/CSA A179, Type S.
 - .2 Use low VOC products in compliance with SCAQMD Rule 1168.
 - .3 Packaged Dry Combined Materials for mortar: to CAN/CSA A179, Type S, using gray colour cement.
- .3 Aggregate: supplied by one supplier.
 - .1 Fine Aggregate: to CAN/CSA A179.
 - .2 Course Aggregate: to CAN/CSA A179
- .4 Water: clean and potable.
- .5 Lime:
 - .1 Hydrated Lime: to CAN/CSA A179, Type S.
- .6 Bonding Agent: latex type.
- .7 Polymer Latex: organic polymer latex admixture of butadiene-styrene type non-emulsifiable bonding admixture.

2.2. COLOUR ADDITIVES

- .1 Powder: inorganic mineral oxide pigment; custom colour to match masonry.
 - .1 Provide colour sample mockup for approval by Contract Administrator.

2.3. MORTAR MIXES

- .1 Mortar for exterior masonry above grade:
 - .1 Loadbearing: type S based on property specifications.
 - .2 Non-Loadbearing: type N based on property specifications.
- .2 Mortar for interior masonry:
 - .1 Loadbearing: type S based on property specifications.
 - .2 Non-Loadbearing: type N based on property specifications.
- .3 Use pre-blended, pre-coloured mortar prepackaged under controlled factory conditions. Ingredients batching limitations to be within 1% accuracy.
- .4 Mix mortar ingredients in accordance with CAN/CSA A179 in quantities needed for immediate use.
- .5 Maintain sand uniformly damp immediately before mixing process.
- .6 Add mortar colour and admixtures in accordance with manufacturer's instructions. Provide uniformity of mix and colouration.
- .7 Do not use anti-freeze compounds including calcium chloride or chloride-based compounds.
- .8 Do not add air entraining admixture to mortar mix.
- .9 Use a batch type mixer in accordance with CAN/CSA A179.
- .10 Pointing mortar: 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 ball. Allow to stand for not less than 1 hour no more than 2 hours then remix with sufficient water to produce mortar of proper consistency for pointing.
- .11 Re-temper mortar only within two hours of mixing, when water is lost by evaporation.
- .12 Use mortar within 1 1/2 hours after mixing at temperatures of 25 degrees C, or 2-1/2 hours at temperatures under 25 degrees C.

2.4. GROUT MIXES

- .1 Bond Beams: 20 MPa strength at 28 days; 100-200 mm slump; mixed in accordance with CAN/CSA A179.
- .2 Engineered Masonry: 20 MPa strength at 28 days; 100-200 mm slump; mixed in accordance with CAN/CSA A179.

2.5. GROUT MIXING

- .1 Mix grout ingredients in quantities needed for immediate use in accordance with CAN/CSA A179.
- .2 Add admixtures in accordance with manufacturer's instructions; mix uniformly.
- .3 Do not use antifreeze liquids, calcium chloride, frost inhibitors based on calcium chloride, salts or other substances used for lowering the freezing point or accelerating time.

3. EXECUTION

3.1. EXAMINATION

- .1 Request inspection of spaces to be grouted.

3.2. PREPARATION

- .1 Apply bonding agent to existing concrete surfaces.
- .2 Plug clean-out holes with block masonry units. Brace masonry for wet grout pressure.

3.3. 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.

3.4. CONSTRUCTION

- .1 Do masonry mortar and grout work in accordance with CAN/CSA A179 except where specified otherwise.
- .2 Apply parging in uniform coating not less than 10 mm thick, where indicated.

3.5. MIXING

- .1 All pointing mortar can be mixed using a regular paddle mixer. Only electric motor mixers are permissible. Mixers run on hydrocarbons are not permitted, due to fumes. Mixing by hand must be pre-approved by the Contract Administrator.
- .2 Clean all mixing boards and mechanical mixing machine between batches.
- .3 Mortar must be weaker than the units it is binding.
- .4 Contractor to appoint one individual to mix mortar, for duration of project. In the event that this individual must be changed, mortar mixing must cease until the new individual is trained, and mortar mix is tested.

3.6. MORTAR PLACEMENT

- .1 Install mortar to requirements of CAN/CSA A179.
- .2 Remove excess mortar from grout spaces.
- .3 Mortar joint finish to be tooled square.

3.7. GROUT PLACEMENT

- .1 Install grout in accordance with CAN/CSA A179.
- .2 Work grout into masonry cores and cavities to eliminate voids.
- .3 Do not install grout in lifts greater than 400 mm, without consolidating grout by rodding.
- .4 Do not displace reinforcement while placing grout.

3.8. FIELD QUALITY CONTROL

- .1 Site Tests, Inspection: in accordance with Section 04 05 00 - Common Work Results for Masonry supplemented as follows:
 - .1 Test and evaluate mortar prior to construction and during construction in accordance with CAN/CSA A179.
 - .2 Test and evaluate grout prior to construction and during construction to CAN/CSA A179; test in conjunction with masonry unit sections specified.
- .2 Manufacturer's Field Services: in accordance with Section 04 05 00 - Common Work Results for Masonry.

3.9. CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.
- .2 Remove droppings and splashings using clean sponge and water.
- .3 Clean masonry with low-pressure clean water and soft natural bristle brush.

END OF SECTION.

1. GENERAL

1.1. RELATED REQUIREMENTS

- .1 Section 04 22 00 – Concrete Unit Masonry

1.2. REFERENCES

- .1 ASTM International Inc.
 - .1 ASTM A 36/A 36M-[05], Standard Specification for Carbon Structural Steel.
 - .2 ASTM A 82/A 82M-[05a], Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - .3 ASTM A 167-[99(R2004)], Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .4 ASTM A 307-[04], Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
 - .5 ASTM A 580/A 580M-[06], Standard Specification for Stainless Steel Wire.
 - .6 ASTM A 641/A 641M-[03], Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - .7 ASTM-A666-[03], Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A23.1/A23.2-[04], 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(R2007)], Billet-Steel Bars for Concrete Reinforcement.
 - .6 CSA-S304.1-[04], Design of Masonry Structures.
 - .7 CSA W186-[M1990(R2007)], Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.3. FIELD MEASUREMENTS

- .1 Make field measurements necessary to ensure proper fit of members.

1.4. DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle masonry anchorage and reinforcing materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:
 - .1 Deliver reinforcement and connectors, identified in shop and placement drawings.
- .2 Packaging Waste Management:
 - .1 Separate and recycle waste materials.

2. PRODUCTS

2.1. MATERIALS

- .1 Bar reinforcement: Steel to CAN/CSA A371 and CAN/CSA G40.18, Grade 400 MPa yield deformed billet bars.
- .2 Connectors: to CAN/CSA A370 and CSA-S304.1.
- .3 Corrosion protection: to CSA-S304.1, galvanized to CSA-S304.1 and CAN/CSA A370.
- .4 Fasteners: installed post-construction:
 - .1 Screw Shields and Plugs: placed directly into solid masonry units.
 - .2 Bolts and Screws: size and type to suit application, locate where indicated.
 - .3 Nails: case-hardened cut or spiral nails, size and type to suit fastening application.
 - .4 Powder-Driven Fasteners: pin styles and lengths to suit fastening application in

- accordance with manufacturers use, load and hold recommendations.
- .5 Adhesives: epoxies, mastics and contact cements for fastening applications, use in accordance with manufacturers' recommendations.
- .5 Ties: hot dip galvanized to CAN/CSA A370 Table 5.2 steel finish.
- .6 Anchors: to CAN/CSA A370:
- .7 Conventional Bolts: ASTM A 307

2.2. FERO CORP. MASONRY ANCHORS

- .1 Fero Engineered Masonry Technologies Block Shear Connector (cmu walls)
 - .1 Block plate: 16 ga. sheet steel, stainless steel finish
 - .2 Block Shear Connector Plate: suit to thickness of masonry block, membrane and insulation assembly.
 - .3 Spacing: as indicated on drawings.
- .2 Fero Engineered Masonry Technologies Heavy Duty Rap-Tie (c.i.p. conc. walls)
 - .1 Block plate: 16 ga. sheet steel, stainless steel finish
 - .2 Block Shear Connector Plate: suit to thickness of insulation assembly.
 - .3 Spacing: as indicated on drawings.

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 Canada.
- .2 Fabricate connectors in accordance with CAN/CSA A370.
- .3 Obtain Contract Administrator's 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.

2.4. SOURCE QUALITY CONTROL

- .1 Upon request, provide Contract Administrator with certified copy of mill test report of reinforcement steel and connectors, showing physical and chemical analysis, minimum 5 weeks prior to commencing reinforcement work].
- .2 Upon request inform Contract Administrator of proposed source of material to be supplied.

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. PREPARATION

- .1 Direct and coordinate placement of metal anchors for [masonry] supplied to other Sections.

3.3. INSTALLATION

- .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 unless indicated otherwise.
- .2 Prior to placing concrete obtain Contract Administrator's approval of placement of reinforcement and connectors.

3.4. FERO CORP. MASONRY ANCHORS

- .1 Install as per manufacturer instructions.

3.5. ANCHORS

- .1 Supply and install metal anchors in accordance with CAN/CSA A370 and CAN/CSA A371.

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 Contract Administrator.
- .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 QUALITY CONTROL

- .1 Site inspections in accordance with Section 04 05 00 - Common Work Results for Masonry.

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.

3.11. CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION.

1. GENERAL

1.1. RELATED REQUIREMENTS

- .1 Section 04 22 00 – Concrete Unit Masonry

1.2. REFERENCES

- .1 ASTM International Inc.
 - .1 ASTM D 2240-[05], Standard Test Method for Rubber Property - Durometer Hardness.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA A371-[04], Masonry Construction for Buildings.
 - .2 CAN/CSA-ISO 14021-[00(R2204)], Environmental Labels and Declarations - Self Declared Environmental Claims (Type II Environmental Labelling).

1.3. ACTION AND INFORMATIONAL 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 datasheets. Include product characteristics, performance criteria, and limitations.
- .3 Shop Drawings:
 - .1 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Shop drawings consist of flashing and installation details. Indicate sizes, spacing, location and quantities of fasteners.
- .4 Samples:
 - .1 Provide masonry accessory samples in accordance with Section 01 33 00 - Submittal Procedures, supplemented as follows:
 - .1 Materials: two coloured samples, illustrating colour and colour range. Include:
 - .1 Movement joint filler.
 - .2 Lap adhesive.
 - .3 Mechanical fasteners.
 - .4 Reglets.
 - .5 Brick vents.
 - .2 Two moisture control material samples, illustrating colour and colour range, size, and shape. Include:
 - .1 Weep hole vents.
 - .2 Mortar diverters.
 - .3 Grout screens.
 - .3 Two flashing material samples, illustrating colour and colour range, size, shape, and profile. Include as specified:
 - .1 Sheet metal flashings.
 - .2 Composite flashings.
 - .3 Plastic and rubber flashings.
- .5 Quality Assurance Submittals:
 - .1 Test reports: submit certified test reports in accordance with Section 04 05 00 - Common Work Results for Masonry.
 - .2 Certificates: submit in accordance with Section 04 05 00 - Common Work Results for Masonry.
 - .3 Manufacturer's Instructions: submit in accordance with Section 04 05 00 - Common Work Results for Masonry, supplemented as follows:
 - .1 Submit installation instructions for fillers, adhesives, reglets, brick vents, weeps, vents, diverters, screens, and flashings.

1.4. FIELD MEASUREMENTS

- .1 Make field measurements necessary to ensure proper fit of members.

1.5. DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle masonry accessories in accordance with, Section 01 61 00 - Common Product Requirements supplemented as follows:
 - .1 Keep fillers and adhesives dry, protected against dampness, and freezing.
 - .2 Store packaged materials off ground and in accordance with manufacturer's written instructions.

2. PRODUCTS

2.1. MATERIALS

- .1 Movement joint filler: purpose-made elastomer to ASTM D 2240 of size and shape indicated.
 - .1 Use low VOC products in compliance with the SCAQMD Rule 1168.
- .2 Material type: expanded polyethylene
- .3 Lap adhesive: recommended by masonry flashing manufacturer. Use low VOC products in compliance with the SCAQMD Rule 1168.
- .4 Weep hole vents: purpose-made galvanized steel.
- .5 Mechanical fasteners: recommended by flashing manufacturer to suit project requirements.

2.2. FLASHINGS

- .1 Sheet metal: as indicated on drawings.

3. EXECUTION

3.1. APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturers written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2. INSTALLATION: MATERIALS

- .1 Install continuous movement joint fillers in movement joints at locations indicated on drawings.
- .2 Lap adhesive: apply adhesive to flashing lap joints.
- .3 Mechanical fasteners: install fasteners to suit application and in accordance with manufacturer's written installation instructions.
- .4 Reglets: install reglets at locations indicated on drawings.
- .5 Brick vents: install brick vents at locations indicated on drawings.

3.3. INSTALLATION: MOISTURE CONTROL

- .1 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.
- .2 Mortar diverters: install purpose made diverters in cavities where indicated and as directed, size and shape to suit purpose and function.
- .3 Grout screens: install purpose made diverters in cavities where indicated and as directed, size and shape to suit purpose and function.

3.4. INSTALLATION: FLASHINGS

- .1 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, and at base of cavity wall and where cavity is interrupted by horizontal members or supports and as shown on drawings. Install flashings under weep hole courses and as indicated.
- .2 In cavity walls and veneered walls, carry flashings from front edge of exterior masonry, under outer wythe, then up backing not less than 150 mm, and as follows:
 - .1 For masonry backing embed or bond flashing 25 mm in joint.
 - .2 For concrete backing, insert or bond flashing into reglets.
 - .3 For wood frame backing, staple flashing to walls behind water resistive paper, and lap joints.
 - .4 For gypsum board and glass fibre faced sheathing backing, bond to wall using manufacturer's recommended adhesive.
 - .3 Lap joints 150 mm and seal with adhesive.
 - .2 Form flashing (end dams) at lintels, sills and wall ends to prevent water from travelling horizontally past flashing ends.
 - .3 Install vertical flashing where outer veneer returns at window or door jambs, to prevent contact of veneer with inner wall.

3.5. CLEANING

- .1 Clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION.

1. GENERAL

1.1. RELATED REQUIREMENTS

- .1 Section 04 05 00 – Common Work Results for Masonry
- .2 Section 04 05 12 – Masonry Mortar & Grout

1.2. REFERENCES

- .1 ASTM International Inc.
 - .1 ASTM E 336-[07], Standard Test Method for Measurement of Airborne Sound Attenuation Between Rooms in Buildings.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A165 Series-[2004], CSA Standards on Concrete Masonry Units [covers: A165.1, A165.2, A165.3].
 - .2 CAN/CSA A371-[04], Masonry Construction for Buildings.
 - .3 CSA S304.1-[04], Design of Masonry Structures.
 - .4 SCAQMD Rule 1168-[05], Adhesives and Sealants Applications.
- .3 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S101-[07], Standard Methods of Fire Endurance Tests of Building Construction and Materials.

1.3. ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Product Data: provide product data, including manufacturer's printed data sheets and catalog pages illustrating products to be incorporated into project for specified products.
- .3 Mock-Up:
 - .1 Construct mockups in accordance with Section 01 45 00 – Quality Control and requirements of Section 04 05 00 – Common Work Results for Masonry supplemented as follows:
 - .1 Construct mockup panel of unit masonry construction 1200x1800mm.
 - .2 Approved mockup may remain as part of the Work.
- .4 Manufacturer's Written Instructions: provide in accordance with Section 04 05 00 - Common Work Results for Masonry.

1.4. QUALITY ASSURANCE SUBMITTALS

- .1 Certificates: provide in accordance with Section 04 05 00 - Common Work Results for Masonry.
- .2 Test and Evaluation Reports: provide certified test reports in accordance with Section 04 05 00 - Common Work Results for Masonry.
- .3 Pre-Installation Meetings: conduct pre-installation meeting in accordance with Section 04 05 00 - Common Work Results for Masonry to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5. DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle concrete unit masonry in accordance with Section 04 05 00 - Common Work Results for Masonry.

2. PRODUCTS

2.1. MATERIALS

- .1 Standard concrete block units Type H/15/A/M and H/20/A/M: to CAN/CSA-A165 Series (CAN/CSA-A165.1).
 - .1 Manufacturer: Expocrete Concrete Products Ltd.
 - .2 Dimensions - Nominal: 140/190 mm wide x 190 mm high x 390 mm long.
 - .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.
 - .4 Profile/Texture for Standard Concrete Unit Masonry:
 - .1 Surface texture: smooth face.
 - .2 Colour: standard grey
- .2 Burnished/Terrazzo concrete block units Type H/15/A/M: to CAN/CSA-A165 Series (CAN/CSA-A165.1)
 - .1 Manufacturer: Expocrete Concrete Products Ltd.
 - .2 Dimensions - Nominal: 140/190 mm wide x 190 mm high x 390 mm long.
 - .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.
 - .4 Profile/Texture for Burnished Architectural Concrete Unit Masonry:
 - .1 Surface texture: smooth face units with one or more faces ground.
 - .2 Colour: #591 Pietra Antica

2.2. REINFORCEMENT

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

2.3. CONNECTORS

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

2.4. FLASHING

- .1 Flashing: in accordance with Section 04 05 23 - Masonry Accessories.

2.5. MORTAR MIXES

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

2.6. GROUT MIXES

- .1 Grout and grout mixes in accordance with Section 04 05 12 - Masonry Mortar and Grout.

2.7. BURNISHED BLOCK SEALER

- .1 Water based acrylic emulsion for protecting and enhancing the finish of the burnished concrete block.
 - .1 Standard of Acceptance: Sure Klean Burnished Block Sealer by Prosoco.

2.8. 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.

2.9. 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.
- .2 Tolerances for architectural concrete masonry units in accordance with CAN/CSA A165.1, supplemented as follows:
 - .1 Maximum variation in length or height between units within specific job lot for specified dimension 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.
 - .4 Maximum variation in width between units within specific job lot for specified dimension not to exceed 2mm.

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 All exposed interior concrete block to be Burnished/Terrazzo type except 117 mechanical and electrical room.
 - .2 Coursing: Stack bond as per drawings.
 - .3 Coursing height: 203mm (8") for one block and one joint.
 - .4 Jointing:
 - .1 Interior Burnished Masonry: raked horizontal and flush vertical.
 - .2 Interior Standard Masonry: concave where exposed.
 - .3 Flush for all locations to receive AVB membrane, wall base and as indicated in drawings.
- .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 as indicated on drawings.
 - .4 Install special site cut shaped units.

3.4. CONSTRUCTION

- .1 Cull out masonry units, in accordance with CAN/CSA A165 and approved 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 Construct masonry walls using stack bond unless otherwise noted.
- .4 Build around frames previously set and braced. Fill behind hollow frames within masonry walls with mortar or grout and embed anchors.
- .5 Fit masonry closely against electrical and plumbing outlets so collars, plates and covers overlap and conceal cuts.
- .6 Install movement joints and keep free of mortar where indicated.
- .7 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.
- .8 Solid Units: apply mortar over entire vertical and horizontal surfaces. Avoid bridging of airspace between brick veneer and backup wall with mortar.
- .9 Ensure compacted head joints. Use full or face-shell joint as indicated.
- .10 Tamp units firmly into place.
- .11 Do not adjust masonry units after mortar has set. Where resetting of masonry is required, remove, clean and reset units in new mortar.
- .12 Tool exposed joints square; strike concealed joints flush.
- .13 After mortar has achieved initial set up, tool joints.
- .14 Do not interrupt bond below or above openings.

3.5. REPAIR/RESTORATION

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

3.6. BURNISHED BLOCK SEALER

- .1 Install as per manufacturer's written recommendations and instructions.
- .2 Schedule: apply to all interior masonry block surfaces.

3.7. CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning, supplemented as follows.
 - .1 Progress Cleaning:
 - .1 Concrete Unit Masonry:
 - .1 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: 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 from landfill as specified in Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

3.8. PROTECTION

- .1 Brace and protect concrete unit masonry in accordance with Section 04 05 00 - Common Work Results for Masonry.

END OF SECTION.