Part 1 General

1.1 SECTION INCLUDES

.1 Brick for cavity wall construction, veneer wythe, complete with required thru-wall flashings, cavity vents and installation of loose angle lintels over openings and shelf angle supports face.

.2 Concrete masonry single wythe construction.

.3 Cut Stone for cavity wall construction.

.4 Mortar for masonry.

.5 Reinforcement, anchorage, and accessories.

.6 Build in items supplied by other sections.

.7 Cut and fit for other sections of work.

1.2 RELATED SECTIONS

.1 Section 03 20 00 – Concrete Reinforcing: supply of steel reinforcing for masonry.

.2 Section 07 21 15 – Insulation.

.3 Section 07 28 00 – Air and Vapour Barriers.

.4 Section 07 84 00 - Firestopping: Firestopping at penetrations of masonry work.

.5 Section 07 92 00 - Joint Sealers: Rod and sealant at control and expansion joints.

1.3 REFERENCES

.1 CAN3-S304M - Masonry Design and Construction for Buildings.

.2 CSA A165M Series - CSA Standards on Concrete Masonry Units.

.3 CSA A371M - Masonry Construction for Buildings.

.4 CSA A370M - Connectors for Masonry.

.5 CSA A179M - Mortar and Grout for Unit Masonry.

.6 ASTM C207 - Hydrated Lime for Masonry Purposes.

.7 IMIAC - International Masonry Industry All-Weather Council: Recommended Practices and Guide Specification for Cold Weather Masonry Construction.

1.4 SUBMITTALS

.1 Section 01 33 00: Submission requirements.

.2 Samples brick: Submit four samples of face brick, units to illustrate colour, texture and extremes of colour range.

.3 Samples mortar: Submit two samples of mortar, illustrating mortar colour and colour range.

.4 Constructed Samples: provide samples of brick and mortar combination for approval by the Contract Administrator. Samples shall be 600 mm x 600 mm mounted on 19 mm plywood.

.5 Mortar: Provide mix design and mortar cube test results on approved coloured mortar.

.6 Provide shop drawings for the stone work. Indicate stone layout and sizes, anchor details required environmental conditions, and admixture limitations.

1.5 QUALITY ASSURANCE

.1 Perform Work in accordance with CSA A371 - Masonry Construction for Buildings and CAN3-S304M - Masonry Design and Construction for Buildings.

1.6 REGULATORY REQUIREMENTS

.1 Conform to applicable code for fire rated masonry construction.

.2 Masonry system to be designed to the NBC 2005 for a building importance category of post-disaster.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Cold Weather Requirements: Conform to CSA A371M - Masonry Construction for Buildings; for cold weather construction requirements.

.2 Maintain materials and surrounding air temperature to maximum 32 degrees C prior to, during, and 48 hours after completion of masonry work.

Part 2 Products

2.1 CONCRETE MASONRY UNITS

.1 Hollow Load Bearing Block Units (CMU): CSA A165 Series, Refer to Structural drawings for type and weight.

.2 Size and Shape: Nominal modular size of 200 mm x 200 mm x 400 mm. Provide special units for 90 degree corners, bond beams, lintels and bullnosed corners.

2.2 BRICK UNITS

.1 Face Brick: IXL Industries, giant brick

.2 Size and Shape: Giant size nominal modular size of 100 x 100 x 400 mm. Provide special units for 90 degree corners, lintels.

2.3 STONE

.1 Tyndall Stone : Sawn face slabs cut to size indicated on drawings; all exposed edges rubbed finish; Grey colour; supplied by Gilles Quarries.

2.4 MATERIALS – MORTAR

.1 Portland Cement: CAN3-A5/A8/A362-M88, ASTM C150 Normal Type I.

.2 Hydrated Lime: ASTM C207.

.3 Water: Clean and potable.

.4 Mortar Walls and Partitions: refer to structural drawing notes for mortar strengths specification.

.5 Mortar colour: Mortar for concrete block to be gray. Mortar for brick to match brick.

2.5 MORTAR MIXING

.1 Thoroughly mix mortar ingredients in accordance with CSA A179M in quantities needed for immediate use.

.2 Add mortar colour in accordance with manufacturer's instructions. Provide uniformity of mix and colouration.

.3 Do not use anti-freeze compounds to lower the freezing point of mortar.

.4 If water is lost by evaporation, re-temper only within two hours of mixing.

.5 Use mortar within two hours after mixing at temperatures of 32 degrees C, or two-and-one-half hours at temperatures under 5 degrees C.

2.6 GROUT MIXING

.1 Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 Course grout.

.2 Add admixtures in accordance with manufacturer's instructions; mix uniformly.

.3 Do not use anti-freeze compounds to lower the freezing point of grout.

2.7 MIX TESTS

.1 Testing of Mortar Mix: In accordance with ASTM C270.

.2 Testing of Mortar Mix: In accordance with CSA A179 for compressive strength, consistency, mortar aggregate ratio, water content, air content,

.3 Testing of Grout Mix: In accordance with ASTM C1019 for compressive strength, slump,

2.8 REINFORCEMENT AND ANCHORAGE

.1 Single Wythe Joint Reinforcement: Ladder type; galvanized steel construction; 3/16" side rods; BL30 manufactured by Blok-Lok..

.2 Brick veneer ties: 1.61 galvanized sheet metal L - plate conforming to ASTM Standard A570, complete with V type tie and insulation support. Rap-Tie connector as manufactured by Ferro. Fasten to steel stud using minimum two #10 galvanized screws.

.3 All reinforcing and ties for stone to be stainless steel.

.4 Reinforcing Steel: refer to notes on structural drawings..

2.9 FLASHINGS

.1 Sheet Membrane Flashing: 1.5 mm thick, polyethylene and rubberized asphalt, width to suit application. Bituthane 3000 manufactured by Grace Construction Materials.

.2 Primer: rubber based solvent type as recommended by flashing manufacturer.

2.10 ACCESSORIES

.1 Control Joint Filler: Close cell polyethylene oversized 50 percent; self-expanding; maximum lengths; Ethafoam manufactured by Dow Chemicals.

.2 Weeps: Formed opening in mortar.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that field conditions are acceptable and are ready to receive work.

.2 Verify items provided by other sections of work are properly sized and located.

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

3.2 PREPARATION

.1 Direct and coordinate placement of metal anchors supplied to other sections.

.2 Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

.3 Plug clean-out holes with block masonry units . Brace masonry for wet grout pressure.

3.3 INSTALLATION MORTAR AND GROUT

.1 Install mortar and grout to requirements of the specific masonry section. sections.

.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.

.5 Remove excess mortar from grout spaces.

3.4 COURSING

.1 Establish lines, levels, and coursing indicated. Protect from displacement.

.2 Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

.3 Concrete Masonry Units:

.1 Bond: Running and Stacked refer to drawing s for locations.

.2 Coursing: One unit and one mortar joint to equal 200 mm.

.3 Mortar Joints: Concave.

.4 Brick Units:

.1 Bond: Running.

.2 Coursing: Three units and three mortar joints to equal 400 mm.

.3 Mortar Joints: Concave.

3.5 PLACING AND BONDING

.1 Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

.2 Lay hollow masonry units with face shell bedding on head and bed joints.

.3 Buttering corners of joints or excessive furrowing of mortar joints are not permitted.

.4 Remove excess mortar as Work progresses.

.5 Interlock intersections and external corners.

.6 Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

.7 Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

.8 Isolate masonry partitions from vertical structural framing members with a control joint.

.9 Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.6 INSTALLATION – STONE

.1 Erect stone in accordance with stone supplier's instructions and erection drawings.

.2 Arrange stone pattern to provide a consistent joint width of 6 mm.

.3 Install mortar in accordance with CSA A179.

.4 Place setting buttons and set stone in full mortar setting bed to support stone over full bearing surface and to establish joint dimensions.

.5 Shore up units until setting bed will maintain panel in position without movement for 7 days after setting.

.6 Fill dowel and lifting holes with mortar.

.7 To accommodate pointing mortar, rake out joints 16 to 19 mm. Brush mortar joints clean. Fill joints with pointing mortar. Pack and work into voids. Neatly tool surface to concave joint.

3.7 WEEPS

.1 Install weeps in veneer at 800 mm oc horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

.2 Provide air vents in veneer at same spacing as weeps at top of walls and below shelf angles and window / opening sills.

3.8 CAVITY WALL

.1 Do not permit mortar to drop or accumulate into cavity air space or to plug weeps.

.2 Build inner wythe ahead of outer wythe to receive cavity insulation air/vapour barrier adhesive.

.3 Install rigid insulation in cavity to locations indicated on drawings to provide cavity compartmentalization. Insulation to run entire height of cavity without interruption. Provide compartmentalization at building corners and at 30 feet along walls maximum.

3.9 REINFORCEMENT AND ANCHORAGE

.1 Spacing for tie anchors: 600 mm Horizontal; 600 mm Vertical in walls with concrete and concrete block backup and 600 mm Vertical x 400 mm horizontal in walls with steel stud backup

.2 Install horizontal joint reinforcement as noted on structural drawings.

.3 Lap joint reinforcement ends minimum 150 mm.

.4 Support and secure reinforcing bars from displacement. Maintain position within 13 mm of dimensioned position.

.5 Embed anchors attached to structural steel members. Embed anchorages in every second block joint.

3.10 MASONRY FLASHINGS

.1 Extend flashings horizontally above ledge or shelf angles and lintels, under parapet caps.

.2 Turn flashing up minimum 200 mm and seal to sheathing over stud back-up.

.3 Lap end joints minimum 150 mm and seal watertight.

.4 Turn flashing, fold, and seal at corners, bends, and interruptions.

3.11 LINTELS

.1 Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.

.2 Do not splice reinforcing bars.

.3 Support and secure reinforcing bars from displacement. Maintain position within 12 mm of dimensioned position.

.4 Place and consolidate grout fill without displacing reinforcing.

.5 Reinforce openings as detailed .

.6 Allow masonry lintels to attain specified strength before removing temporary supports.

.7 Maintain minimum 400 mm bearing on each side of opening.

3.12 CONTROL JOINTS

.1 Do not continue horizontal joint reinforcement through control joints.

.2 Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

.3 Size control joint in accordance with Section 07 92 00 for sealant performance.

3.13 GROUTED COMPONENTS

.1 Support and secure reinforcing bars from displacement. Maintain position within 13 mm of dimensioned position.

.2 Place and consolidate grout fill without displacing reinforcing.

3.14 BUILT-IN WORK

.1 As work progresses, install built-in metal door and glazed frames, anchor bolts, plates, and other items to be built-in the work and furnished by other sections.

.2 Install built-in items plumb and level.

.3 Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.

.4 Do not build in organic materials subject to deterioration.

3.15 TOLERANCES

.1 Maximum Variation From Alignment of Columns: Pilasters: 1/4 inch.

.2 Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

.3 Maximum Variation From Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

.4 Maximum Variation From Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

.5 Maximum Variation From Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

.6 Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

.7 Maximum Variation From Cross Sectional Thickness of Walls: 1/4 inch.

3.16 CUTTING AND FITTING

.1 Cut and fit for other sections as required. Cooperate with other sections of work to provide correct size, shape, and location.

.2 Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.17 CLEANING

.1 Remove excess mortar and mortar smears.

.2 Replace defective mortar. Match adjacent work.

.3 Clean soiled surfaces with cleaning solution.

.4 Use non-metallic tools in cleaning operations.

3.18 PROTECTION OF FINISHED WORK

.1 Without damaging completed work, provide protective boards at exposed external corners which may be damaged by construction activities.

END OF SECTION