Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 03 30 00 – Cast in place concrete

.2 Section 04 05 12 – Masonry mortar and grout.

.3 Section 04 05 23 – Masonry accessories.

.4 Section 04 22 00 – Concrete unit masonry.

.5 Section 04 43 16 – Granite veneer cladding.

.6 Section 04 43 26 – Precut stone cladding.

.7 Section 07 26 00 – Vapour retarders

.8 Section 07 62 00 – Sheet metal flashing and trim.

.9 Section 07 92 10 –Joint Sealants

1.2 REFERENCES

.1 ASTM International

.1 ASTM A82/A82M-07, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

.2 ASTM A167-99(R2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.3 ASTM A307-12, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.

.4 ASTM A380/A380M-13: Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems

.5 ASTM A580/A580M-3a, Standard Specification for Stainless Steel Wire.

.6 ASTM A641/A641M-09a, Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

.7 ASTM A666-10, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

.8 ASTM A276-08a, Standard Specification for Stainless Steel Bars and Shapes.

.9 ASTM A967/A967M-13 Standard Specification for Chemical Passivation Treatments for Stainless Steel Parts.

.2 CSA Group

.1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.2 CAN/CSA-A179-04(R2009), Mortar and Grout for Unit Masonry.

.3 CAN/CSA-A370-04(R2009), Connectors for Masonry.

.4 CAN/CSA-A371-04(R2009), Masonry Construction for Buildings.

.5 CSA G30.18-09, Carbon Steel Bars for Concrete Reinforcement.

.6 CSA S304.1-04(R2010), Design of Masonry Structures.

.7 CSA W186-M1990 (R2012), Welding of Reinforcing Bars in Reinforced Concrete Construction.

.3 Reinforcing Steel Institute of Canada (RSIC)

.1 RSIC -2004 Reinforcing Steel Manual of Standard Practice.

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 reinforcing materials, connectors and anchorage. Product data sheets must include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Québec, Canada.

.2 Submit drawings detailing bar bending details, anchorage details, lists and drawings of placement of units.

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

.4 Manufacturers' Instructions: submit manufacturer's installation instructions.

.5 Provide 2 samples of each of the anchorages and connectors described in this section to the Departmental Representative for approval.

1.4 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties, and in accordance with Section 04 05 00 - Common Work Results for Masonry.

.2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Mock-ups:

.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control and requirements of Section 04 05 00 - Common Work Results for Masonry.

.2 Perform two samples of work and installation of each of the anchors, connectors or fittings described in this section.

1.5 SITE MEASUREMENTS

.1 Make site measurements necessary to ensure proper fit of members.

1.6 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 ground, indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect anchors and reinforcing materials from nicks, scratches and blemishes.

.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates[padding, packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.7 ACCEPTABLE PRODUCTS AND MATERIALS

.1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products

Part 2 Products

2.1 MATERIALS

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

.2 Fiberglass reinforcement

.3 Connectors: according to standards CAN/CSA-A370 and CSA S304.1.

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

.5 Fasteners: installed post-construction:

.1 Bolts and Screws: size and type to suit application, locate where indicated.

.2 Powder-Driven Fasteners (pistol driven): pin styles and lengths to suit fastening application in accordance with manufacturers use, load and hold recommendations.

.3 Adhesives: epoxies, mastics and contact cements for fastening applications, use in accordance with manufacturers' recommendations.

.4 Helical ties – stainless steel 6mm diameter

.6 Ties: hot dip galvanized to CAN/CSA-A370 .

.1 Adjustable Unit Ties: to CAN/CSA-A370: proprietary type ties, type, style and size to suit application in accordance with manufacturer's recommendations.

.2 Joint Reinforcement Ties: according to standard CAN/CSA-A370:

.1 Single Wythe Joint Reinforcement: ladder or truss type:

.1 Steel wire, hot dip galvanized: according to standard ASTM A641, Class 3 after fabrication.

.2 Cold drawn steel wire conforming according to standard ASTM A82.

.7 Anchors: to CAN/CSA-A370:

.1 Conventional Anchors: bent bar anchors sized to suit application.

.2 Wedge Anchors: expansion anchors type wedge and bolt, sized to suit application.

.3 Sleeve Anchors: type sleeve and bolt, sized to suit application.

.4 Dovetail Anchors: stainless steel bent steel strap.

.5 Stone Anchors: series 300 stainless steel conforming to ASTM A666. Anchors to be manufactured as per drawings.

.8 Conventional Bolts:

.1 Bolts: to ASTM A36, straight bolts with square or hex-headed nuts.

.2 Through bolt rods: to ASTM A307 threaded rod or threaded ASTM A36 bar stock.

2.2 TYPE OF ANCHORS FOR HISTORIC MASONRY WORKS

.1 All anchors, connectors, and reinforcements for historic masonry works are in stainless steel type 316 and comply with ASTM A276 - 08a, Standard Specification for Stainless Steel Bars and Shapes.

.2 ANCHOR TYPE 1: type BL anchor in stainless steel, 6mm thick by 38mm wide with a variable length up to 500mm. The anchor is perforated and equipped with one stainless steel threaded dowel 10 mm in diameter and 75mm in length. Type 1 anchors are used to anchor the sidings stones to the substrate. The stones must be pre-drilled before the installation of the dowels that are embedded in the mortar. See drawings for the quantity and location for type 1 anchors. Provide two Type 1 anchors for each of the stones identified to be anchored on the plans.

.3 ANCHOR TYPE 2A: stainless steel cramp, 6mm thick by 50mm in width with a variable length up to 600mm. See drawings for the quantity and location for anchor type 2A. Type 2A anchors are used to anchor the coat of arms, pedimented window jambs, sills of the pedimented windows of the Central building and large stone on the turrets and other locations shown on the plans.

.4 ANCHOR TYPE 2B: heavy duty stainless steel cramp, 10mm thick by 50mm in width with a variable length up to 700mm. See drawings for the quantity and location for type 2b anchors. Type 2b anchors are used to anchor the cornice stones of the Central building and on the two square towers and other locations shown on the plans. The stones must be cut back for embedding the cramp at the surface on top of the stone. Provide 2 cramps per cornice stone.

.5 ANCHOR TYPE 3: 10mm diameter by 100mm long stainless steel dowel except when otherwise noted plans. See drawings for the quantity and location for type 3 anchors. The type 3 anchors are used to connect two stones together at locations shown in the drawings.

.6 ANCHOR TYPE 4: Cintec type anchor attached to a stainless steel BL type plate 4mm thick by 38mm in width - variable-length. The contractor shall submit for approval workshop drawings. That type of anchor can be applied on any Cintec anchors. See architectural drawings for quantity and location for type 4 anchors.

2.3 FABRICATION

.1 Fabricate reinforcing in accordance with CSA A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.

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

.3 Obtain Departmental Representative's approval for locations of reinforcement splices other than shown on placing drawings.

.4 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.

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

2.4 SOURCE QUALITY CONTROL

.1 Provide Departmental Representative 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 Inform Departmental Representative of proposed source of material to be supplied.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for anchorage and reinforcing materials installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative 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 Departmental Representative.

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, CSA A23.1/A23.2 and CSA S304.1 unless indicated otherwise.

.2 Prior to placing mortar and grout , obtain [Departmental Representative's approval of placement of reinforcement and connectors.

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

3.4 BONDING AND TYING

.1 Bond walls of two or more wythes using metal connectors in accordance with 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 Install unit, adjustable, single wythe and multiple wythe joint reinforcement where indicated and in accordance with CAN/CSA-A370 and CAN/CSA-A371 and manufacturer's instructions.

.1 Bond walls of single or multiple wythes using metal connectors and anchors in accordance with CAN/CSA-A371 and as indicated.

.2 Install horizontal joint reinforcement 400 mm on centre.

.3 Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 400 mm each side of opening.

.4 Place joint reinforcement continuous in first and second joint below top of walls.

.5 Lap joint reinforcement ends minimum 150 mm.

.6 Connect joint corners and intersections with strap anchors 400 mm on centre.

3.5 REINFORCED LINTELS AND BOND BEAMS

.1 Reinforce masonry beams, masonry lintels and bond beams as indicated.

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

.3 Support and position reinforcing bars in accordance with CAN/CSA-A371.

3.6 GROUT INJECTION

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

3.7 ANCHORS

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

3.8 LATERAL SUPPORT AND ANCHORAGE

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

3.9 MOVEMENT JOINTS

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

3.10 FIELD BENDING

.1 Do not field bend reinforcement, connectors and anchors, except where indicated or authorized by Departmental Representative.

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

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

3.11 FIELD QUALITY CONTROL

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

.2 Obtain Departmental Representative approval of placement of reinforcement and connectors, prior to placing mortar and grout.

3.12 FIELD TOUCH-UP

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

3.13 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/recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION