
Part 1 General

1.1 REFERENCES

- .1 Definitions:
 - .1 Refer to ASTM E2260-30 for definition of the following terms specific to this Section: In-Situ Mortar, Repointing, Raking.
 - .2 Tooling: Finishing of masonry joints using tool to provide final contour.
- .2 ASTM International
 - .1 ASTM A496/A496M-07, Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
 - .2 ASTM E2260-03 (2012), Standard Guide for Repointing (Tuckpointing) Historic Masonry
- .3 CSA International
 - .1 CAN/CSA-A165 SERIES-04(R2009), CSA Standards on Concrete Masonry Units covers: A165.1, A165.2, A165.3.
 - .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.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for masonry products and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
 - .2 Shop drawings consist of bar bending details, lists and placing drawings.
 - .3 Placing drawings, indicate sizes, spacing, location and quantities of reinforcement and connectors.
- .4 Quality-Control Program For Masonry Repointing

1.3 QUALITY ASSURANCE

- .1 Masonry Contractor:
 - .1 Use single Masonry Contractor for masonry work.
 - .2 Quality-Control Program For Masonry Repointing: Prepare a written quality-control program for masonry repointing to systematically demonstrate the ability of personnel to
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properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage due to worker fatigue.

- .3 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 Quality Control supplemented as follows:
 - .2 Masonry Repair: Prepare sample area of masonry repointing work 1 200 x 1 800 mm showing Repointing.
 - .3 Mock-ups used:
 - .1 To judge workmanship
 - .2 To demonstrate ability to remove in-situ mortar without damage to masonry.
 - .3 To establish acceptable methodology of in-situ mortar removal
 - .4 To demonstrate blending of Repointing to existing.
 - .4 Construct mock-up where directed by Departmental Representative.
 - .5 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with work.
 - .6 When accepted by Departmental Representative, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.
 - .7 Start Work only upon receipt of written acceptance of mock-ups Departmental Representative.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .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, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Standard concrete block units: to CAN/CSA-A165 Series (CAN/CSA-A165.1).
 - .1 Classification: H/15/A/M except as modified by fire resistance requirements specified below.
 - .2 Size: Metric Modular 400 long x 200 high x150 wide, and 400 long x 200 high x 200 wide.
 - .3 Special shapes: provide return corner units for exposed corners, except bullnose at outside corners. Provide purpose-made shapes for lintels and bond beams. Provide additional special shapes as indicated.

2.2 REINFORCEMENT AND CONNECTORS

- .1 Bar reinforcement: to CSA-A371 and CAN/CSA G30.18, Grade 400.
- .2 Wire reinforcement: to CSA-A371 and CSA G30.14, truss type, minimum 3.66 mm dia. deformed wires, galvanized, size 50 mm narrower than wall thickness.
- .3 Corrosion protection: galvanized to CSA-S304.

2.3 MORTAR AND GROUT

- .1 Use same brands of materials and source of aggregate for entire project.
- .2 Mortar: to CAN/CSA-A179.
 - .1 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
- .3 Mortar Type: S based on proportion specifications,
- .4 Mortar for foundation walls, and other exterior masonry at or below grade: type M based on proportion specifications.
- .5 Following applies regardless of mortar types and uses specified above:
 - .1 Mortar for grouted reinforced masonry: type S based on proportion specifications.
 - .2 Repointing Mortar:
 - .1 Comply with CAN/CSA-A179, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime.
 - .2 Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
- .6 Grout: Minimum compressive strength of 20.0 MPa at 28 days. Maximum aggregate size and grout slump: CAN/CSA A179.

2.4 MIXES

- .1 Mix grout ingredients in quantities needed for immediate use in accordance with CAN/CSA A179.
- .2 Repointing mortar: Prehydrate repointing 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 nor more than 2 hours then remix with sufficient water to produce mortar of proper consistency for pointing.

2.5 ACCESSORIES

- .1 Nailing Inserts: 0.5 mm minimum thickness, galvanized.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions.
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- .1 Visually inspect substrate and inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .2 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Do masonry work in accordance with CAN/CSA-A371 except where specified otherwise.
 - .1 Bond: running stretcher bond with vertical joints in perpendicular alignment and centred on adjacent stretchers above and below.
 - .2 Coursing height: 200 mm for one block and one joint.
 - .3 Jointing: Tool where exposed to provide smooth compressed concave profile.
- .2 Build masonry plumb, level, and true to line, with vertical joints in alignment.

3.3 CONSTRUCTION

- .1 Exposed masonry:
 - .1 Remove chipped, cracked, and otherwise damaged units, in exposed masonry and replace with undamaged units.
 - .2 Make cuts straight, clean, and free from uneven edges.
- .2 Building-in:
 - .1 Install masonry connectors and reinforcement where indicated on drawings.
 - .2 Build in items required to be built into masonry.
 - .3 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
 - .4 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.
 - .5 Install loose steel lintels where indicated.
- .3 Concrete block lintels:
 - .1 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.
 - .2 End bearing: not less than 200 mm.
- .4 Support of loads:
 - .1 Use grout to CAN/CSA-A179 where grout is used in lieu of solid units.
 - .2 Install building paper below voids to be filled with grout; keep paper 25 mm back from faces of units.

- .5 Provision for movement:
 - .1 Leave 6 mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.
 - .2 Built masonry to tie in with stabilizers, with provision for vertical movement.
- .6 Interface with other work:
 - .1 Cut openings in existing work as indicated.
 - .2 Openings in walls: approved Departmental Representative.
 - .3 Make good existing work. Use materials to patch and repair existing, creating a seamless transition between new and existing, and as indicated.

3.4 REPOINTING MASONRY

- .1 Repoint joints to the following extent:
 - .1 All joints in areas indicated.
- .2 Remove in-situ mortar from joints as follows, according to procedures demonstrated in approved mock-up:
 - .1 Remove mortar from joints to depth of between 2 and 2-1/2 times joint width, but not less than that required to expose sound, unweathered mortar.
 - .2 Remove mortar from masonry surfaces within joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
 - .3 Do not spall edges of masonry units or widen joints.
 - .1 Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet. Strictly adhere to submitted quality-control program.
- .3 Notify Departmental Representative of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.
- .4 Pointing with Mortar:
 - .1 Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
 - .2 Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 9 mm until a uniform depth is formed. Fully compact each layer thoroughly and allow to become thumbprint hard before applying next layer.
 - .3 After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 9 mm. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.

- .4 When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
- .5 Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.
- .6 Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

3.5 REINFORCING AND CONNECTING

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

3.6 BONDING AND TYING

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

3.7 REINFORCED LINTELS AND BOND BEAMS

- .1 Reinforce masonry lintels and bond beams as indicated.
- .2 Place and grout reinforcement in accordance with CAN/CSA-A179, CAN/CSA-A371 and CSA S304.1.

3.8 GROUTING

- .1 Grout masonry in accordance with CAN/CSA-A179, CAN/CSA-A371 and CSA S304.1 and as indicated:
 - .1 Fully grout cores of two-hour fire resistance rated walls to obtain equivalent thickness.
- .2 Provide cleanout port at bottom of each grouted core by removing full face shell. Locate on non-exposed side of wall where possible. Close port by resetting face shell after reinforcing inspection is complete.
- .3 Work grout into masonry cores and cavities to eliminate voids.
- .4 Do not install grout in lifts greater than 400 mm, without consolidating grout by rodding.
- .5 Do not displace reinforcement while placing grout.

3.9 ANCHORS

- .1 Supply and install metal anchors as indicated.

3.10 LATERAL SUPPORT AND ANCHORAGE

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

3.11 SITE TOLERANCES

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

3.13 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 00 10 - General Instructions.
 - .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 00 10 - General Instructions.
- .3 Waste Management: separate waste materials in accordance with Section 01 00 10 – General Instructions, and 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.

3.14 PROTECTION

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

END OF SECTION
