

**Part 1 General****1.1 RELATED REQUIREMENTS**

- .1 Section 04 05 00 – Common work results for masonry
- .2 Section 04 05 19 – Masonry anchorage and reinforcing
- .3 Section 04 05 23 – Masonry Accessories
- .4 Section 04 22 00 – Concrete unit masonry

**1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-A23.1-14/A23.2-14, Concrete materials and methods of concrete construction / Test methods and standard practices for concrete.
  - .2 CAN/CSA-A82-14, Fired masonry brick made from clay or shale
  - .3 CAN/CSA A179-14, Mortar and grout for unit masonry.
  - .4 CSA A371-(F14), Masonry Construction for Buildings.
  - .5 CAN/CSA-A3000-F13, Cementitious materials compendium.
- .2 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM C207-06 (2011), Hydrated Lime for Masonry Purposes.
- .3 International Masonry Industry All-Weather Council (IMIAC)
  - .1 Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- .4 South Coast Air Quality Management District (SCAQMD)
  - .1 SCAQMD Rule 1168-05, Adhesive and Sealant Applications.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Product Data:
  - .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 Provide one copy of Workplace Hazardous Materials Information System (WHMIS) - Material Safety Data Sheets (MSDS) in accordance with Section 01 35 29.06 - Health and Safety Requirements 01 35 43 - Environmental Procedures. Indicate VOC's mortar, grout, parging, colour additives and admixtures. Expressed as grams per litre (g/L).
- .2 Samples:
  - .1 Samples: provide unit samples in accordance with Section 04 05 00 - Common Work Results for Masonry, supplemented as follows:
    - .1 Provide two (2) samples of each type of mortar.
- .3 Provide manufacturer's installation instructions.

**1.4 QUALITY ASSURANCE**

- .1 Test Reports: submit 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.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 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.
- .3 Storage and Handling Requirements:
  - .1 Deliver premixed dry materials for mortar to worksite in lined plastic bags, each bearing manufacturer's name and address, production code and batch number as well as colour and formula numbers.
  - .2 Maintain mortar, grout and packaged materials clean, dry, and protected against dampness, freezing, traffic and contamination by foreign materials.
  - .3 Deliver colouring products in original sealed container, clearly identifying product, manufacturer and colouring recipe.
  - .4 Store water-based colouring products away from frost and from any source of flames or sparks, ideally indoors.
  - .5 Replace defective or damaged materials with new.

**1.6 SITE CONDITIONS**

- .1 See requirements in Section 04 05 00 - Common Work Results for Masonry.

**Part 2 Products****2.1 MATERIALS**

- .1 Use same brands of materials and source of aggregate for entire project.
- .2 Cement
  - .1 Mortar Cement: to CAN/CSA-A3002 and CAN/CSA-A179, Type N.
    - .1 Use low VOC products in compliance with SCAQMD Rule 1168.
  - .2 Packaged Dry Combined Materials for mortar: to CAN/CSA-A179, Type N, using white or grey cement, to manufacturer's recommendations to obtain colour being sought.
- .3 Aggregate: supplied by one supplier.
  - .1 Aggregate: to CAN/CSA-A179
  - .2 Granulometric limits to CSA A82.56

- .4 Water: clean and potable.
- .5 Lime:
  - .1 Quick Lime: to CAN/CSA-A179, Type N et S.
  - .2 Hydrated Lime: to CAN/CSA-A179, Type S.

## 2.2 ADMIXTURES

- .1 Use of adjuvants to be avoided.

## 2.3 MORTAR MIXES

- .1 Mortar for exterior masonry above grade:
  - .1 Non-Load Bearing: type N, prepared according to specifications based on properties set out in Table 6 of CSA A179-04.
- .2 Mortar for interior masonry:
  - .1 Non-Load Bearing: type N, prepared according to specifications based on properties set out in Table 6 of CSA A179-04.

## 2.4 MORTAR MIXING

- .1 Use pre-blended, pre-coloured mortar prepackaged under controlled factory conditions. Ingredients batching limitations to be within 1% accuracy.
- .2 Mix mortar ingredients in accordance with CAN/CSA-A179 in quantities needed for immediate use.
- .3 Maintain sand uniformly damp immediately before mixing process.
- .4 Add admixtures and mortar colour in accordance with manufacturer's instructions. Provide uniformity of mix and colouration.
- .5 Do not use anti-freeze compounds including calcium chloride or chloride based compounds.
- .6 Do not add air entraining admixture to mortar mix.
- .7 Use a batch type mixer in accordance with CAN/CSA-A179.

## 2.5 GROUT MIXES

- .1 Lintels: grout mix 10 to 12.5 MPa strength at 28 days; 200-250 mm slump; premixed type in accordance with CSA A23.1/A23.2, mixed in accordance with CAN/CSA-A179.
- .2 Grout: Minimum compressive strength of 12.5 MPa at 28 days. Maximum aggregate size and grout slump: CAN/CSA-A179.

## 2.6 GROUT MIXING

- .1 Mix batched and delivered grout in accordance with CSA A23.1/A23.2 transit mixed.
- .2 Mix grout ingredients in quantities needed for immediate use in accordance with CAN/CSA-A179.
- .3 Add admixtures in accordance with manufacturer's instructions; mix uniformly.
- .4 Do not use calcium chloride or chloride based admixtures.

**2.7 MIX TESTS**

- .1 Testing Mortar Mix:
  - .1 Test mortar to requirements of Section 01 45 00 - Quality Control, and in accordance with CAN/CSA-A179, for proportion specification and mortar based on property specification. Test during construction by laboratories independent of suppliers during construction for:
    - .1 Adhesion.
    - .2 Compressive strength.
    - .3 Consistency.
    - .4 Mortar aggregate ratio.
    - .5 Sand/cement ratio.
    - .6 Water content and water/cement ratio.
    - .7 Air content.
    - .8 Splitting tensile strength.
- .2 Testing Grout Mix:
  - .1 Test grout prepared according to specifications based on properties and dosage in accordance with Section 01 45 00 – Quality Control and with CAN/CSA-A179. Tests shall be conducted during construction work, to cover the following.
  - .2 Test grout to requirements of Section 01 45 00 - Quality Control, and in accordance with CAN/CSA-A179, for grout based on property specification and proportion specification. Test during construction for:
    - .1 Compressive strength.
    - .2 Sand/cement ratio.
    - .3 Water content and water/cement ratio.
    - .4 Slump.

**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 masonry 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 MORTAR PLACEMENT**

- .1 Install mortar premix mortar to manufacturer's instructions.
- .2 Unless otherwise indicated, apply mortar and grout in accordance with CAN/CSA A179-14.

- .3 Maintain temperature of work between 10 and 25 degrees C throughout work.
- .4 Remove excess mortar from grout spaces.

### 3.3 GROUT PLACEMENT

- .1 Install grout in accordance with manufacturer's instructions.
- .2 Install grout in accordance with CAN/CSA-A179.
- .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.

### 3.4 MIXING

- .1 All pointing mortar can be mixed using a regular paddle mixer conforming to CAN/CSA A179. Only electric motor mixers are permissible. Mixers run on hydrocarbons are not permitted, due to fumes,
- .2 Total duration of mixing should be no less than 3 minutes and no more than 5 minutes.
- .3 Clean the mixing boards and the mixer between each mixing batch.
- .4 Assign same person to mix mortar throughout work. If someone else needs to be called upon during work, cease all mixing until new worker is trained and mixture is tested.
- .5 Use factory premixed and pre-packaged mortar under controlled conditions. Precision of assay should be in order of 1 to 100.
- .6 Do not use frost-preventing compounds, notably calcium chloride or other chloride-based compounds.
- .7 Do not use air-entraining agent in mixture.
- .8 Time limit for applying mortar:
  - .1 Discard any mortar not used within 1.5 hours if temperature is higher than 25 degrees C or 2.5 hours if temperature is lower.
  - .2 Remixing: within times specified above, mortar stiffened by evaporation can be remixed with as much water as needed to regain workability.
- .9 Remix mortar only two (2) hours after mixing in case of water loss through evaporation.
- .10 Use mortar within two (2) hours after mixing when temperature is 32 degrees C, or within 2.5 hours if temperature is below 5 degrees C.

### 3.5 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 during construction in accordance with CAN/CSA-A179.
  - .2 Test and evaluate grout 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.

**3.6 CLEANING**

- .1 Nettoyage de la maçonnerie en cours et à la fin des travaux et à la fin: référer à la section 01 74 11 Nettoyage.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.
- .3 Remove droppings and splashings using clean sponge and water.
- .4 Clean masonry with low pressure clean water and soft natural bristle brush.

**3.7 PROTECTION OF COMPLETED WORK**

- .1 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each work day. Anchor securely in position.

**END OF SECTION**