SECTION 04 70 00

MANUFACTURED MASONRY

GENERAL NOTES TO SPECIFIER:

THIS SPECIFICATION SECTION HAS BEEN PREPARED TO ASSIST DESIGN PROFESSIONALS IN THE PREPARATION OF PROJECT OR OFFICE MASTER SPECIFICATIONS. IT FOLLOW GUIDELINES ESTABLISHED BY CONSTRUCTION SPECIFICATIONS CANADA (CSC), AND THEREFORE MAY BE USED WITH MOST MASTER SPECIFICATION SYSTEMS WITH MINOR EDITING.

EDIT CAREFULLY TO SUIT PROJECT REQUIREMENTS, MODIFY AS NECESSARY AND DELETE ITEMS THAT ARE NOT APPLICABLE. VERIFY THAT REFERENCED SECTION NUMBERS AND TITLES ARE CORRECT. (NUMBERS AND TITLES REFERENCED ARE BASED ON MASTERFORMAT® 2010 EDITION.)

THIS SECTION ASSUMES THE PROJECT MANUAL WILL CONTAIN COMPLETE DIVISION 01 DOCUMENTS INCLUDING SECTIONS 01 25 13 – PRODUCT SUBSTITUTION PROCEDURES, 01 33 00 – SUBMITTAL PROCEDURES, 01 62 00 – PRODUCT OPTIONS, 01 66 00 PRODUCT STORAGE AND HANDLING REQUIREMENTS, 01 74 00 – CLEANING AND WASTE MANAGEMENT, 01 77 00 CLOSEOUT PROCEDURES, AND 01 78 00 – CLOSEOUT SUBMITTALS. CLOSE COORDINATION WITH DIVISION 01 SECTIONS IS REQUIRED. IF THE PROJECT MANUAL DOES NOT CONTAIN THESE SECTIONS, ADDITIONAL INFORMATION SHOULD BE INCLUDED UNDER THE APPROPRIATE ARTICLES.

THIS IS A CLOSED PROPRIETARY SPECIFICATION.

NOTES TO THE SPECIFIER ARE CONTAINED IN BOXES AND SHOULD BE DELETED FROM FINAL COPY.

GREEN TEXT AND NOTES RELATE TO LEED PROJECTS AND CAN BE DELETED IF THE PROJECT IS NOT INTENDED TO ATTAIN LEED CERTIFICATION.

OPTIONAL ITEMS REQUIRING SELECTION OR FEATURES THAT MAY BE INCLUDED OR DELETED DEPENDING ON PROJECT REQUIREMENTS BY THE SPECIFIER ARE ENCLOSED WITHIN BRACKETS, E.G., [35] [40] [45]. MAKE APPROPRIATE SELECTIONS AND DELETE OTHERS.

ITEMS REQUIRING ADDITIONAL INFORMATION ARE UNDERLINED BLANK SPACES, E.G.,[__________].

REVISE HEADER AND FOOTER TO SUIT PROJECT/OFFICE REQUIREMENTS.

ELECTRONIC VERSIONS OF THIS SPECIFICATION UTILIZE AUTOMATIC PARAGRAPH NUMBERING.

WHEN EDITING IS COMPLETE, DELETE ALL TEXT ON THIS PAGE, THEN REMOVE THE PAGE BREAK AT THE BOTTOM OF THE PAGE TO REMOVE THIS PAGE FROM THE DOCUMENT.

SPECIFICATION BEGINS ON THE FOLLOWING PAGE.
Part 1  General

1.1  SECTION INCLUDES

.1  [Manufactured stone veneer, ] [Manufactured brick veneer, ] [Manufactured stone trim, ] and application materials.

.2  [Drainage Mat.]

1.2  RELATED SECTIONS

INSTITUTE DIVISION 01 SECTIONS CONTAINING LEED REQUIREMENTS IF APPLICABLE. ENTER SECTION(S) IN .1 BELOW. INCLUDE SECTION THAT SPECIFIES SUBSTITUTE FOR MANUFACTURER’S MASONRY BELOW .7. ADD/DELETE OTHER SECTIONS AS AppROPRIATE.

.1  Section [______] – [____________]

.2  Section 05 50 00 – Metal Fabrications.

.3  Section 07 21 00 – Thermal Insulation.

.4  Section 07 25 00 – Weather Barrier.

.5  Section 07 27 00 – Air Barriers.

.6  Section 07 92 00 – Joint Sealing.

.7  Section [______] – [____________].

1.3  REFERENCES

.1  ASTM C39/C39M-10 - Compressive Strength of Cylindrical Concrete Specimens.

.2  ASTM C67-09 - Sampling and Testing Brick and Structural Clay Tile.


.4  ASTM C192/C192M-07 - Making and Curing Concrete Test Specimens in the Laboratory.

.5  ASTM C482-02 (2009) - Bond Strength of Ceramic Tile to Portland Cement Paste.

.6  ASTM E84-10b - Surface Burning Characteristics of Building Materials.

.7  CAN/CGSB-51.32-M77 - Sheathing, Membrane, Breather Type.

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

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


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

.12  CSA A3000-08 - Cementitious Materials Compendium.

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


1.4 ADMINISTRATIVE REQUIREMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordination:

.1 Coordinate with other work having a direct bearing on work of this section.
.2 Coordinate construction of suitable enclosures and heating for masonry work during construction [if required].

.3 Pre-installation Meetings: Convene one (1) week before starting work of this section.

1.5 SUBMITTALS

.1 Section 01 33 00: Submission procedures.

.2 Product Data:

.1 Submit product literature indicating manufactured masonry and application materials [including mortar colour charts, [rainscreen material,] and weather resistant barrier].

.3 Samples:

.1 Submit [300 x 300 mm (12 x 12 inch)] panel containing samples of specified manufactured masonry showing full range of colours and textures [and complete with specified mortar].

.4 Shop Drawings:

.1 Masonry Units: Show sizes, profiles, spacing, details, and locations of special shapes.
.2 Stone Trim Units: Show sizes, profiles, and locations of each stone trim unit required.

.5 Quality Assurance – Quality Control:

.1 Submit proof of manufacturer and installer qualifications.

NOTE: ONLY USE NEXT ARTICLE IF REQUIRED.

.2 [Submit test reports.]

.1 Certified test reports showing compliance with specified performance characteristics and physical properties.

.3 Submit manufacturer’s installation instructions.

.6 LEED Documentation

.1 LEED Submittals: In accordance with [LEED Canada NC] [And] [Section 01 35 18—LEED Requirements] [_______].

.1 Submit required letters, calculations, spreadsheets and templates prepared by [Engineer] [Consultant] [Architect] [_______] for submitting to CaGBC for Credit Interpretation Requests.

.2 Submit Project Materials and Cost Data: Provide statement for total cost for building materials used for Project.

.3 Provide LEED submittals indicating how following requirements will be met.
Paragraphs below require contractor to make early submittals indicating how certain LEED requirements will be met. Edit the following paragraphs to suit project.

1. Materials and Resources Credit: [MRc2.1 Construction Waste Management: Divert 50% from Landfill] [MRc2.2 Construction Waste Management: Divert 75% from Landfill]: Submit Construction Waste Management plan in accordance with Section [01 74 21—Construction/Demolition Waste Management and Disposal] [______].

Delete paragraph below if recycled content of various materials is specified, rather than giving the contractor the option to determine how recycled content requirement will be met.

2. Submit documentation as required for certification in accordance with Section 01 35 18 for:

   1. Materials and Resources Credit: [MRc4.1—Recycled Content: 7.5% (Post-Consumer + 1/2 Post-Industrial)]
   2. [MRc4.2—Recycled Content: 15% (Post-Consumer + 1/2 Post-Industrial)]: Submit product data, list [And certification letter(s)] of proposed materials with recycled content:
      1. Showing their cost and percentages by weight of post-consumer and pre-consumer recycled content.
   3. Materials and Resources: [Credit MRc5.1 Regional Materials: 10% Extracted and Manufactured Regionally]
   4. [MRc5.2 Regional Materials: 20% Extracted and Manufactured Regionally]: Submit [Product data and] list of proposed regionally manufactured materials [And regionally extracted, harvested and recovered materials] [______] indicating:
      1. [Minimum of 10% of building materials or products for which at least 80% of the mass is extracted, processed and manufactured within 497 miles (800 km) of Project site].
      2. [Minimum of 20% of building materials or products, for which at least 80% of the mass is extracted, processed and manufactured within 1491 miles (2400 km) of Project site, and shipped by rail or water].
   5. Materials and Resources: [Credit MRc6 Rapidly Renewable Materials]: Submit product data for rapidly renewable materials.
      1. Include statement indicating costs for each rapidly renewable material.

Note: Include following article if pursuing credit. Remember to include note at 2.2

6. Durable Building (MR Credit 8): Submit fifty (50) year limited warranty.

Note: Include following article if using product to interior of building.

7. Indoor Environmental Quality Credit: [EQc4.1 Low-Emitting Materials: Adhesives and Sealants]: Submit product data ensuring that VOC content in g/L for adhesives and sealants used is calculated in accordance with SCAQMD Rule 1168. [Greenguard IAQ certification.] [Greenguard Children and Schools certification.].
1.6 CLOSEOUT SUBMITTALS
  .1 Section 01 78 00: Submission Procedures.
  .2 Submit Maintenance Guide for all installed products.

1.7 QUALITY ASSURANCE
  .1 Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five (5) year [documented] experience.
  .2 Installer Qualifications: Company with documented experience in installation of manufactured masonry including minimum five (5) projects within 400 mile radius of this Project.
  .3 Certifications:

1.8 MOCK-UPS
  .1 Section 01 45 00: Mock-up requirements.
  .2 Provide 1200 x 1200 mm (48 x 48 inch) mock-up of manufactured masonry veneer showing colours and textures, use of reinforcement, mesh, [rainscreen drainage,] termination details, coursing, mortar, and workmanship.
  .3 Mock-up will be used to judge workmanship, substrate preparation, operation of equipment and material application.
     .1 Approved mock-up will become the standard of acceptance for all masonry work.
     .2 Do not commence work until mock-up has been approved by the Consultant.
     .3 Locate where directed by Consultant.

1.9 DELIVERY, STORAGE, AND HANDLING
  .1 Section 01 66 00 – Product storage and handling requirements.
  .2 Follow manufacturer’s instructions.
  .3 Store moisture-sensitive materials in weather protected enclosures.

1.10 PROJECT/SITE CONDITIONS
  .1 Environmental Requirements: Maintain materials and ambient temperature in area of installation at minimum 4°C (40°F) prior to, during, and for 48 hours following installation.
  .2 Comply with requirements of CSA A371 for hot and cold weather requirements for installation of manufactured masonry.

1.11 WARRANTY
  .1 Special Warranty: Provide manufacturer’s standard limited warranty against defects in manufacturing for a period of fifty (50) years following date of [Substantial Completion][Final Acceptance].

1.12 EXTRA MATERIALS
  .1 Furnish extra manufactured stone material in a variety of shapes and sizes in quantity equal to [three] percent of the installed stone.
Part 2  Products

2.1 MANUFACTURER


EDIT THE FOLLOWING PARAGRAPH TO INCLUDE SUSTAINABLE REQUIREMENTS RELATED TO THE CONSTRUCTION AND VERIFICATION OF THIS PROJECT FOR ATTAINING ENVIRONMENTAL PERFORMANCE GOALS. CHOOSE PRODUCTS AND MATERIALS WITH RECYCLED CONTENT OR RESOURCE EFFICIENT CHARACTERISTICS WHENEVER POSSIBLE. USE LEAST TOXIC AND LOW VOC CONTENT SEALANTS, ADHESIVES, SEALERS AND FINISHES NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THE PROJECT.

.2 LEED Requirements:

.1 Provide materials with minimum 54% post-industrial recycled content.
.2 Fabricate materials within a 2400 km radius of site and delivered primarily to site only by sea or train.
.3 [Provide materials and products in accordance with Section [01 47 15 - Sustainable Requirements: Construction][_____].]
.4 [Provide verification requirements in accordance with Section [01 47 17 - Sustainable Requirements: Contractor’s Verification] [_____].]

2.2 MANUFACTURED MASONRY MATERIALS

.1 Cultured Stone® Textures:

SELECT EITHER SINGLE TEXTURE OR BLENDED TEXTURE BELOW. FOR SINGLE TEXTURE DESIGNATE TEXTURE NAME AND COLOR. FOR BLENDED TEXTURES, DESIGNATE PERCENTAGE (OF EACH TEXTURE), TEXTURE NAME AND COLOR; FOR EXAMPLE:

A. 80 PERCENT COUNTRY LEDGESTONE, ASPEN.
B. 20 PERCENT DRESSED FIELDSTONE, ASPEN.

SELECT TEXTURES AND COLORS FROM CURRENT CULTURED STONE PRODUCT RESOURCES: http://www.culturedstone.ca/Products/cultured-stone-textures.aspx

.1 Single Texture:

.1 [Ancient Villa Ledgestone™ ]
.2 [Blended Textures ]
.3 [Cast-Fit™ ]
.4 [Cobblefield® ]
.5 [Coral Stone ]
.6 [Country Ledgestone]
.7 [Del Mare Ledgestone® ]
.8 [Dressed Fieldstone ]
.9 [Drystack Ledgestone ]
.10 [European Castle Stone ]
.11 [Limestone ]
.12 [Old Country Fieldstone ]
.13 [Pro-Fit® Alpine Ledgestone ]
.14 [Pro-Fit® Ledgestone ]
.15 [River Rock ]
.16 [Rockface ]
.17 [Southern Ledgestone ]
.18 [Split Face ]
.19 Stream Stone

Blended Textures:

.1 Aspen 80% Country Ledgestone/20% Dressed Fieldstone.
.2 Bucks County 80% Southern Ledgestone/20% Dressed Fieldstone
.3 Chardonnay 80% Country Ledgestone/20% Dressed Fieldstone.

DESIGNATE BRICK COLOR BELOW. SELECT COLOR FROM CURRENT CULTURED STONE PRODUCT RESOURCES.
http://www.culturedstone.ca/Products/cultured-brick-veneer.aspx

.2 Cultured Brick® Thin Brick Veneer: [ _________________ ] [As shown on Drawings].

DESIGNATE TRIM COLORS/TEXTURES BELOW FROM CURRENT CULTURED STONE PRODUCT RESOURCES.
http://www.culturedstone.ca/Products/architectural-stone-trim.aspx

.3 Architectural Trim:

Pier Capstones:

.1 Texture: [Flagstone] [Chiseled].
.2 Color: [ _________________ ] [As shown on Drawings].
.3 Size: [610 x 610 mm (24 x 24 inches)] [815 x 815 mm (32 x 32 inches)] [As shown on Drawings].

Wall Capstones:

.1 Texture: [Flagstone] [Chiseled].
.2 Color: [ _________________ ] [As shown on Drawings].
.3 Size: [305 x 510 mm (12 x 20 inches)] [410 x 510 mm (16 x 20 inches)] [As shown on Drawings].

Hearthstones:

.1 Color: [ _________________ ] [As shown on Drawings].
.2 Size: [485 x 510 mm (19 x 20 inches)] [Random size Water Wash Pavers].

Trimstones:

.1 Color: [ _________________ ] [As shown on Drawings].
.2 Size: 150 x 200 x 48 mm (6 x 8 x 1-7/8 inches).

Keystones:

.1 Color: [ _________________ ] [As shown on Drawings].
.2 Size: 215 x 255 x 48 mm (8-1/2 x 10 x 1-7/8 inches).

Tuscan Lintels—Stone Textured:

.1 Color: [ _________________ ] [As shown on Drawings].
.2 Size: 550 x 150 x 65 mm (22 x 6 x 2-5/8 inches).

Watertable/Sill—Stone Textured:

.1 Color: [ _________________ ] [As shown on Drawings].
.2 Size: 50 (front), 65 (back) x 75 x 455 mm (2 (front), 2-1/2 (back), x 3 x 18 inches).
.3 Provide sloped top surface and drip edge.
Light Fixture Stones—Chamfered Edge with Grooved Border:
1. Color: [Gray] [Taupe] [As shown on Drawings].
2. Size: [205 x 255 x 48 mm (8 x 10 x 1-7/8 inches)] [230 mm x 380 x 48 mm (9 x 15 x 1-7/8 inches)] [As shown on Drawings].
3. Provide 100 mm x 38 mm (4 x 1-1/2 inch) UL approved metal octagon extension box.

Receptacle Stones—Raised Chamfered Edge:
1. Color: [Gray] [Taupe] [As shown on Drawings].
2. Size: 150 x 205 x 38 mm (6 x 8 x 1-1/2 inches).
3. Provide single receptacle 150 x 100 x 44 mm (6 x 8 x 1-3/4 inch) UL approved metal extension box.

Manufactured Masonry Physical Properties:
1. Compressive Strength: ASTM C192 and ASTM C39, 12.4 MPa (1800 psi), five (5) specimen average, 10.3 MPa (1500 psi) minimum for individual unit.
2. Bond Between Stone Unit, Type S Mortar, and Backing: ASTM C482, 345 kPa (50 psi).
3. Thermal Resistance: ASTM C177, R-factor, 0.355 per 25.4 mm (1 inch) of thickness.
4. Freeze/Thaw: ASTM C67, no disintegration and less than 3 percent weight loss.

CULTURED STONE HAS BEEN TESTED TO BE IN CONFORMANCE WITH ULC/CAN4 S114-M80. ALSO IT IS ACCEPTED AS A CLASS A (CLASS I) FINISH RATING WHEN TESTED IN ACCORDANCE WITH ASTM E84 AND IS TESTED AND LISTED BY UNDERWRITERS LABORATORIES INC AS A ZERO FLAME SPREAD AND ZERO SMOKE DEVELOPMENT PRODUCT. IF FURTHER TESTING REQUIREMENTS ARE NEEDED, CONTACT YOUR TECHNICAL REPRESENTATIVE FOR FURTHER INFORMATION.

REVIEW REQUIREMENTS NECESSARY BY BUILDING CODE AND INCLUDE OR MODIFY THE FOLLOWING THREE PARAGRAPHS AS NECESSARY.

5. Combustibility: ULC/CAN4 S114-M80, passes.
6. Fire Hazard Test: to Underwriters Laboratories listing, flame spread/smoke developed 0/0.
7. Fire Hazard Test: ASTM E84, Class A (Class I).
8. Maximum Veneer Unit Weight: 73 kg/m² (15 psf).

2.3 DRAINAGE MAT
1. Drainage Mat: Randomly oriented geometric patterned drainage and ventilation mat designed to eliminate moisture vapour in wall applications with following characteristics:
   1. Physical:
      1. Thickness: 10 mm (0.40 inch)
      2. Weight: 641 g/m² (18.9 oz/yd²).
      3. Width: 1220 mm (48 inches).
      4. Rail length: 13.7 m (45 feet).
      1. Class A flame spread per ASTM E84.
      2. Hydrophobic compound.
      3. Resistant to chemical damage.
      4. Does not support mould growth.

2. Acceptable Product: [Driwall Rainscreen 10 mm][Driwall Rainscreen 0751-1] as manufactured by Keene Building Products.
2.4 RELATED MATERIALS

EDIT FOLLOWING MATERIALS BASED ON LOCAL USAGE AND BUILDING CODE REQUIREMENTS. DELETE MATERIALS SPECIFIED IN SEPARATE SECTIONS.

.1 Asphalt Impregnated Building Paper: CAN/CGSB-51.32, heavy duty asphalt-saturated kraft paper, minimum 3.5 lb/100 ft2 water resistance rating 30-45 minutes.

.2 Metal Lath: [1.4 kg/m² (2.5 lb) galvanized expanded metal lath] [1.3 mm (18 gauge) woven wire mesh] [1.8 kg/m² (3.4 lb) galvanized expanded rib lath].

.3 Flashing: As specified in Section [________].

.4 Fasteners:
   .1 [Into Wood Studs: Minimum 3 mm (0.120 inch) shank diameter galvanized nails or staples of sufficient length to penetrate 35 mm (1-3/8 inches) minimum into the stud.]
   .2 [Into Metal Studs: Minimum 11.1 mm (7/16 inch) head diameter, corrosion-resistant, self-drilling, self-tapping, pancake head screws of sufficient length to penetrate 10 mm (3/8 inch) minimum into the stud.]

.5 Mortar: Premixed Type N or mortar mixed using components and proportions following manufactured masonry manufacturer's installation instructions. Comply with CAN/CSA A179.

.6 [Mortar Colour: Iron oxide pigments.]

.7 Sealants: Type [______], in accordance with Section [07 92 00 - Joint Sealants] [______].

USE THE FOLLOWING SUBPARAGRAPH IF LOW-EMITTING MATERIALS ARE REQUIRED FOR LEED CREDIT EQC4.1 WHERE VOC CONTENT OF SEALANTS MUST BE LESS THAN VOC CONTENT LIMITS OF SCAQMD RULE 1168

.1 Sealant: Maximum VOC limit [250] g/L [To SCAQMD Rule 1168].

.8 Weep Screed as required for installation over framed construction.

Part 3 Execution

3.1 EXAMINATION

.1 Examine substrates upon which manufactured masonry will be installed.

.2 Coordinate with responsible entity to correct unsatisfactory conditions.

.3 Commencement of work by installer is acceptance of substrate conditions.

3.2 PREPARATION

.1 Protection: Prevent work from occurring on the opposite of walls to which manufactured masonry is applied during and for 48 hours following installation of the manufactured masonry.

.2 Surface Preparation: Follow manufacturer’s instructions designated below for the appropriate type of manufactured masonry and substrate.

.3 Clean surfaces thoroughly and allow to dry prior to installation.

3.3 FLASHINGS

.1 Install flashings as specified in Section [________] and as shown on Drawings.
3.4 DRAINAGE MAT INSTALLATION

.1 Install in accordance with manufacturer’s instructions.

.2 Install weather resistant barrier to manufacturer’s recommendations and as shown on Drawings.

.3 Place drainage mat horizontally against exterior wall fabric side out, entangled core to building interior. Starting at bottom of the wall, position first piece of drainage mat where the bottom edge of the veneer will meet ledger board.

.4 Mechanically fasten using staples, large head nail, or washer and screw using one fastener for each 0.1 m² (1 ft²). When installing over concrete or block back-up walls that do not accept mechanical fasteners, hold in place with small dabs of glue every 610 mm (24 inches). Do not fasten through flashing.

.5 Seam adjacent pieces with selvage edge overlapping lower drainage mat piece.

.6 Trim drainage mat around all penetrations, windows, and doors so that the material is flush to the flashing.

3.5 INSTALLATION

MANUFACTURER’S INSTALLATION INSTRUCTIONS COVER NORMAL INSTALLATION CONDITIONS. UNUSUAL CONDITIONS MAY REQUIRE ADDITIONAL INFORMATION IN THIS ARTICLE. FOLLOW MANUFACTURER’S RECOMMENDATIONS FOR TYPE OF STONES TO BE INSTALLED WITH MORTARLESS JOINTS.

.1 [Install Cultured Stone® products in accordance with manufacturer’s Cultured Stone® installation instructions using [grouted] [mortarless] joints.]

.2 [Install Cultured Brick® products in accordance with manufacturer’s Cultured Brick® installation instructions.]

.3 [Install architectural trim products in accordance with manufacturer’s Cultured Stone® installation instructions.]

.4 [Install/Apply Related Materials specified above in accordance with type of substrate and manufactured masonry manufacturer's installation instructions.]

3.6 FIELD QUALITY CONTROL

INSERT NUMBER OF ANTICIPATED SITE VISITS BELOW. DELETE THIS ARTICLE IF MANUFACTURE’S FIELD SERVICES ARE NOT REQUIRED.

.1 Manufacturer’s Field Services: Provide [____] periodic site visits, each of approximately [one] [__ ] hours duration.

3.7 CLEANING

.1 Section 01 74 00 - Cleaning and Waste Management.

.2 Clean manufactured masonry in accordance with manufacturer’s installation instructions.

3.8 PROTECTION

.1 Protect finished work from rain during and for 48 hours following installation.

.2 Protect finished work from damage during remainder of construction period.

END OF SECTION¹

¹ This specification was prepared specifically for Canadian Stone Industries. Issue Date: April 2011.