SPEC NOTE: This master specification section includes STONEROX SPEC NOTEs for information purposes and to assist the architect / specification writer in making appropriate decisions. STONEROX SPEC NOTEs always immediately precedes the text to which it is referring. The section serves as a guideline only and should be edited with deletions and additions to meet specific project requirements.

SPEC NOTE: This specification section follows the recommendations of the Construction Specifications Canada, Manual of Practice including MasterFormat, SectionFormat, and PageFormat. Optional text is indicated by square brackets [ ]; delete the optional text including the brackets in the final copy of the specification. Delete all SPEC NOTEs in the final copy of the specification. This Section is written for the Canadian industry with units of measurement shown in SI Metric and Imperial measurement following in square brackets.

PART 1:GENERAL

1.1 SUMMARY

.1 This Section includes requirements for supply and installation of exterior cast stone masonry, consisting of the following, as required for complete and proper installation:
- .1 Thin Veneer, Lightweight Stone Exterior Facing
- .2 Metal Lath and Fasteners
- .3 Drainage Mat
- .4 Mortar and Grout
- .5 Accessories

1.2 RELATED REQUIREMENTS

SPEC NOTE: Include in this paragraph only those sections and documents that directly affect the work of this section. Do not include Division 00 Documents or Division 01 Sections since it is assumed that all technical sections are related to all project Division 00 Documents and Division 01 Sections to some degree. Refer to other documents with caution since referencing them may cause them to be considered a legal part of the Contract. Edit the following paragraphs to suit specific project conditions.

.1 Section 05 40 00 - Cold-Formed Metal Framing

.2 Section 05 50 00 - Metal Fabrications

.3 Section 06 10 00 - Rough Carpentry

.4 Section 06 16 00 - Sheathing

.5 Section 07 21 00 - Thermal Insulation

.6 Section 07 27 00 - Air Barriers

.7 Section 07 62 00 - Sheet Metal Flashing and Trim

.8 Section 07 92 00 - Joint Sealants

.9 Section 08 11 00 - Metal Doors and Frames

.10 Section 08 14 00 - Wood Doors

.11 Section 08 41 00 - Entrances and Storefronts

.12 Section 08 44 00 - Curtain Wall and Glazed Assemblies

.13 Section 08 50 00 - Windows

.14 Section 09 29 00 - Gypsum Board

1.3 REFERENCES

.1 Specification American Society for Testing and Materials (ASTM):
- .1 ASTM C39/C39M-15a, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
- .2 ASTM C67-14, Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
- .3 ASTM C144-11, Standard Specification for Aggregate for Masonry Mortar
- .4 ASTM C177-13, Standard Test Method for Steady-State Head Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
- .5 ASTM C207-06(2011), Standard Specification for Hydrated Lime for Masonry Purposes
- .6 ASTM C270-14a, Standard Specification for Mortar for Unit Masonry
- .7 ASTM C482-02(2014), Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement
- .8 ASTM C567/C567M-14, Standard Test Method for Determining Density of Structural Lightweight Concrete
- .9 ASTM C847-14a, Standard Specification for Metal Lath
- .10 ASTM C932-06(2013), Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering
- .11 ASTM C979/C979M-10, Standard Specification for Pigments for Integrally Colored Concrete
- .12 ASTM C1032-14, Standard Specification for Woven Wire Plaster Base
- .13 ASTM C1059/C1059M-13, Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete
- .14 ASTM C1063-14d, Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
- .15 ASTM E84-15a, Standard Test Method for Surface Burning Characteristics of Building Materials

.2 Canadian Standards Association (CSA):
- .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type
- .2 CAN/CSA A179-14, Mortar and Grout for Unit Masonry
- .3 CAN/CSA A371-14, Masonry Construction for Buildings
- .4 CSA A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete
- .5 CSA A3000-13, Cementitious Materials Compendium
- .6 CSA G30.18-09(R2014), Carbon Steel Bars for Concrete Reinforcement
- .7 CSA S304-14, Design of Masonry Structures

.3 Underwriter Lavatories of Canada (ULC):
- .1 CAN/ULC-S102-10, Surface Burning Characteristics of Building Materials and Assemblies
- .2 CAN/ULC-S114-05, Standard Method of Test for Determination of Non-combustibility in Building Materials

.3 CAN/ULC-S134-13, Standard Method of Fire Test for Exterior Wall Assemblies

SPEC NOTE: Include the following paragraph if this project requires a green rating system. Edit to suit which rating system is required on this project, if the LEED Rating system has not been selected.

.4 Canadian Green Building Council (CaGBC):

SPEC NOTE: Select one of the following subparagraphs depending on which type of construction is required on this project.

.1 LEED Canada for New Construction (NC) and Major Renovations 2009
.2 LEED Canada for Core and Shell Development (CS) 2009

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate the Work of this Section with the installation of backup wall substrate, [and] air barrier membrane, [and exterior insulation board]; Sequence work so that installation of cast stone masonry veneer and accessories coincides with installation of substrate preparation without causing delay to the Work.

SPEC NOTE: Delete the following paragraph in its entirety if a pressure equalized cavity space is not required on this Project.

.1 Coordinate components of the work of this Section with work performed by other Sections including; but not limited to the following:
  .1 Cast stone masonry veneer forms a part of the pressure equalized cavity and protective facing.
  .2 Construct assembly to allow for ventilation, drainage and pressure equalization of the cavity between the cast stone masonry veneer and the substrate with the outside pressures.
  .3 Construct cavity space divided into separate compartments as a means of controlling these pressure differences within the building envelope.
  .4 Coordinate requirements for structural steel support angles and brackets supplied and installed onto the building structure by Section 05 50 00.

.2 Pre-Construction Conference: Arrange a site meeting attended by the Contractor, the Subcontractor, the Consultant, materials supplier(s), and other relevant personal before commencement of work for this Section; as indicated in Section 01 31 13 Project Meetings.
  .1 Confirmation of specifications and details for the project;
  .2 Required mortar testing, batch control and grouting procedures;
  .3 Review methods and procedures related to installation, including manufacturer's written instructions;
  .4 Examine substrate conditions for compliance with manufacturer's installation requirements;
  .5 Review temporary protection measures required during and after installation;
  .6 Coordination of exterior control / expansion joints;
  .7 Confirmation of tooled joints to exposed masonry faces;
  .8 Confirmation of drainage mat, air barrier and membrane flashing materials and details used for construction;
  .9 Review of submitted cast stone masonry veneer samples;
  .10 Review of hot and cold weather requirements.

1.5 SUBMITTALS

.1 Provide requested information in accordance with Section 01 33 00 Submittals Procedures.

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Product Data: Submit manufacturer's data sheets covering the care and recommended maintenance procedures for incorporation into maintenance manuals.

.2 Shop Drawings: Submit shop drawings of cast stone masonry veneer, components, and accessories to the Consultant for review.

.1 Indicate sizes, profiles, coursing, and locations of special shapes of cast stone masonry veneer and trims.

.2 Detail corner units, end dam units, and other special applications for fabricated flashings.

.3 Samples:

.1 Submit for approval sample boards of proposed colour and texture for Consultant's approval.

.2 Where blending of styles and/or colours offered by the manufacturer are selected for the project, submit for approval sample boards of each design blend, at a size large enough to show the design intent for Consultant's approval.

.3 Submit full size samples of accessories as requested by Consultant.

.4 Manufacturer's Warranties: Submit copies of manufacturer's warranties.

.5 Site Quality Control Submissions:

.1 Submit detailed description of methods, materials, and equipment used in accordance with cold or hot weather requirements; and proposed cast stone masonry veneer cleaning techniques.

.6 Design Modifications:

.1 Submit design modifications necessary to meet performance requirements and field coordination.

.2 Variations in details or materials shall not adversely affect the appearance, durability or strength of cast stone masonry veneer.

.3 Maintain general design concept without altering size of members, profiles and alignment.

SPEC NOTE: Delete the following paragraph in its entirety if sustainable design submittals are not required as part of the Project.

SPEC NOTE: Add and/or remove items below to comply with LEED prerequisites or credits selected for the Project. After meeting the prerequisite / credit requirements, complete the required documentation for each.

SPEC NOTE: Consult the project team's designated LEED Accredited Professional if these or other credits are going to be pursued.

.7 Sustainable Design Submittals: Coordinate project sustainable design requirements with Section 01 33 29 Sustainable Design Reporting; in addition, provide information for following specific requirements of this Section:

.1 Materials and Resource (MR) Credit 2 Construction Waste Management

.1 Requirement: [MRc2.1 - Divert 50%][MRc2.2 - Divert 75%] construction and demolition debris from disposal in landfills and

incineration facilities. Redirect recyclable removed resources back to the manufacturing process and redirect reusable materials to appropriate sites.

.2 Strategy: Submit Construction Waste Management Plan in accordance with Section 01 74 19 Construction Waste Management.

.2 Materials and Resource (MR) Credit 4 Recycled Content

.1 Requirement: MRc4.1 - Use materials with recycled content such that the sum of post-consumer recycled content plus 1/2 of the pre-consumer content constitutes at least 10%, based on cost of the total value of the materials in the project.

.2 Strategy: Submit product data and certification letters from material suppliers, which indicate recycled content. Show cost and percentages by weight of post-consumer and pre-consumer recycled content.

.3 Materials and Resource (MR) Credit 5 Regional Materials

.1 Requirement: MRc5.1 - Use at least 20% of building materials or products that have been extracted, harvested, recovered and processed within 800 km (500 miles) (2,400 km if shipped by rail or water) of the final manufacturing site.

.2 Strategy: Submit product data and list of proposed regionally manufactured materials for which at least 80% of the mass of the building material or product is extracted, processed and manufactured within 800 km (500 miles) of project site.

1.6 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: Submit manufacturer's written instructions for cleaning solutions, materials and procedures, include name of original installer and contact information in accordance with Section 01 78 23 Operation and Maintenance Data.

.1 Provide specific warning of any maintenance practice or materials that may damage or disfigure the finished Work.

1.7 QUALITY ASSURANCE

.1 Qualifications: Provide proof of qualifications when requested by Consultant:

.1 Manufacturer / Supplier: Obtain materials from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties.

.2 Installers: Execute Work of this Section using qualified personnel skilled in installation of work of this Section, having a minimum of five (5) years proven experience of installations similar in material, design, and extent to that indicated for this Project.

SPEC NOTE: Mock-ups establish quality of the work for the materials indicated in this Section. Delete the following paragraph if the scope of work in this Section is minimal and a mock-up is not required.

1.8 MOCK-UPS

.1 Mock-ups: Construct mock-ups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution in accordance with Section 01 45 00 Quality Control for mock-ups and as follows:

.1 Build mock-up of typical wall section, incorporating the stone veneer, metal lath, drainage

mat and anchoring,[cavity insulation,] air and moisture barrier, substrate materials, and adjacent materials including flashing, doors, windows and trim.

.2 Notify Consultant a minimum seven (7) days prior to mock-up construction.

.3 Review and acceptance of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Consultant specifically notes such deviations in writing.

.4 Once reviewed by Consultant, acceptable mock-up can form a permanent part of the Work, and will form the basis for acceptance for the remainder of the project.

.5 Remove and replace materials found not acceptable at no cost to Owner or Consultant.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Delivery: At the time of delivery, visually inspect all materials for damage. Note any damaged to materials on the receiving ticket and immediately report to the shipping company and the material manufacturer.

.1 Remove damaged materials from the site immediately.

.2 Storage: Store materials in accordance with manufacturer's written instructions, raised off the ground and cover with a weather proof flame resistant sheeting or tarpaulin.

.3 Handling: Material shall be handled in accordance with sound material handling practices and in accordance with manufacturer's written instructions.

1.10 PROTECTION

.1 Store materials on dry platforms protected from soiling and weather.

.2 Cover stored stone masonry units with protective enclosure if exposed to weather. Place polyethylene or other plastic film between wood and other finished surfaces of units when stored for extended periods of time.

.3 When air temperature has dropped below 0 deg C (e.g. overnight), ensure that materials are above freezing, and free from ice, when installed.

.4 Build stonework in enclosures heated by approved smokeless means, when temperature remains below 0°C. All materials shall be above 4 deg C when installed.

.5 Prevent Work from freezing for at least forty-eight (48) hours by enclosure, artificial heat, or other acceptable method.

.6 Cover top of Work with waterproof sheet when Work is not in progress.

.7 Protect adjacent surfaces and Work from damage during cleaning of masonry.

.8 Provide adequate bracing for stonework during construction and until permanent lateral supports are in place.

.9 Protect stonework from frost heave and other forces to which it would normally not be subject after

completion of the Work.

1.11 ENVIRONMENTAL CONDITIONS

.1 Site Measurements: Verify dimensions by field measurements and indicate measurements on Shop Drawings where materials outlined in this Section are indicated to fit walls and other construction.

.2 Establish dimensions and proceed with materials outlined in this Section where field measurements cannot be made without delaying the work; allow for site trimming and fitting.

.3 Ambient Conditions: Install materials outlined in this Section after completion of work by other Sections is complete, and all penetrations are watertight; to provide adequate dry, clean, level, and plumb surfaces for installation and adhesion.

.1 Cold Weather Application: Conform to Clause 5.15.2 of CSA-A371 and maintain temperature of mortar between 5 deg C and 50 deg C until used.

.2 Hot Weather Application: Protect freshly laid stone masonry from drying too rapidly, by means of waterproof, non-staining coverings.

1.12 WARRANTY

.1 Provide manufacturer's fifty (50) year warranty from date of Substantial Performance, in the name of the Owner, stating that the stone masonry will not show evidence of visible cracking or spalling, resulting from inferior materials or workmanship.

.2 Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

PART 2:PRODUCTS

2.1 MATERIALS DISTRIBUTORS

.1 Materials and accessories specified herein are fabricated by:

StoneRox
5291 Bethesda Side Road, Stouffville, Ontario, Canada, L4A 7X3
Phone: (416) 798-7809 or (866) 798-7809
Email: info@stonerox.com
Website: www.stonerox.ca

2.2 MATERIALS

.1 Cast Stone Masonry Units:

.1 Solid units consisting of light weight aggregate, portland cement and coloured pigments, that have been cast in moulds and cured in controlled conditions; thin bed depth, and having the following typical average properties when tested to the identified standard:

.1 Minimum Compressive Strength: 35 MPa (5000 psi) at 28 days.

.2 Water Absorption: Less than 15%.

.3 Fire Rating: Zero Flame Spread

.4 Weight: 8-10 lbs/ft^2 when using lightweight aggregate

.5 Density: Less than 1700kg/m^3

.2 Thickness: 25mm to 50mm (1" to 2")
.3 Style:

SPEC NOTE: Select one or more of the following StoneRox cast stone masonry styles below. Multiple styles can be selected to create a blend.

.1 Cobble Stone
.2 Mountain Ledge
.3 Dry Stack
.4 Field Stone
.5 Limestone
.6 River Stone
.7 Precision Ledge

SPEC NOTE: When designing custom stone blends, consult the local StoneRox representative for design suggestions and percentages.

.8 Custom Blend:

SPEC NOTE: Select one of the following colours indicated below. Consult the local StoneRox representative for colour samples.

.4 Colour:
.1 Beaverton Bronze
.2 Sandstone Beach
.3 Delhi Harvest
.4 Bronte Bark
.5 Loyalist Grey
.6 Meaford Mist
.7 Kawartha Ridge

SPEC NOTE: Precision Ledge is not available in the following colours: Kawartha Ridge, Wiarton Willow and Charcoal.

.8 Kawartha Ridge
.9 Wiarton Willow

SPEC NOTE: Charcoal is considered a Custom Colour. Consult your local StoneRox representative for pricing and lead time on obtaining this colour for the selected stone style above.

.10 Charcoal

SPEC NOTE: When designing custom colour stone blends, consult the local StoneRox representative for design suggestions and percentages.

.11 Custom Colour Blend:

SPEC NOTE: Delete any of the following cast stone masonry accessories which are not required on the project.

.2 Cast Stone Masonry Accessories:
.1 Rock Face Sill: Rock face textured finish, 610mm (24") long, 60mm (2-3/8") high,

complete with drip.

.2 Rock Face Keystone: 100mm (4") wide base and 200mm (8") wide top, 267mm (10-1/2") high.

.3 Arch Stone:

.1 Small Arch: Length: 89mm (3-1/2") base, 95mm (3-3/4") top; Height: 216mm (8-1/2").

.2 Medium Arch: Length: 89mm (3-1/2") base, 114mm (4-1/2") top; Height: 216mm (8-1/2").

.3 Large Arch: Length: 89mm (3-1/2") base, 150mm (6") top; Height: 216mm (8-1/2").

.4 Smooth Keystone: Lightly chiseled texture, 127mm (5") wide base and 200mm (8") wide top, 305mm (12") high.

.5 Trim Stone: Lightly chiseled texture for window and door surrounds; 89mm (3-1/2") long and 216mm (8-1/2") high.

.6 Electrical Covers: Lightly chiseled texture for electrical or lighting fixtures:

.1 Octagon: 200mm x 242mm (8" x 9-1/2")

.2 Rectangular: 200mm x 150mm (8" x 6")

SPEC NOTE: Select one of the following colour options below for cast stone masonry accessories.

SPEC NOTE: Standard colours for cast stone masonry accessories include Buff or Grey. Colour matching adjacent stone masonry units are considered custom. Consult your local StoneRox representative for pricing and lead time on obtaining custom colours for the selected cast stone masonry accessories above.

.7 Cast Stone Masonry Accessories Colour Options:

.1 Buff

.2 Grey

.3 Colour to match adjacent cast stone masonry unit.

SPEC NOTE: Delete the following if the cast stone masonry veneer is applied to masonry or concrete back up wall assembly.

.3 Sheathing:

SPEC NOTE: Select one of the following paragraphs below and delete the sheathing material not required on the project. Wood sheathing is common practice when installing on wood framing.

.1 Wood Sheathing: Douglas Fir veneer core plywood, 19mm (3/4") thick, Select Sheathing-Tight Face, good two sides, sanded "B" faces, exterior grade and conforms to CSA 0121, as indicated in Section 06 16 00 Sheathing.

.2 Exterior Gypsum Sheathing: Glass mat faced, water-resistant treated core gypsum board, 1220mm (48") wide sheets of maximum practical lengths to minimize end joints, 13mm (1/2") thick, silicone treated gypsum core, front and back faces penetrated with inorganic glass fibre mats, square edge, conforming to ASTM C1177. As indicated in Section 09 29 00 Gypsum Board.

.4 Air Barrier: As indicated in Section 07 27 00.

SPEC NOTE: Delete the following paragraph when installing cast stone masonry veneer on residential construction.

.5 Continuous Insulation:

SPEC NOTE: Select one of the following paragraphs below and delete the insulation not required on the project.

.1 Type I extruded polystyrene foam insulation board, 50mm (2") thick, as indicated in Section 07 21 00.

.2 Noncombustible mineral fibre insulation manufactured in accordance with CAN/ULC S702 and tested in accordance with CAN/ULC S114, 50mm (2") thick, as indicated in Section 07 21 00.

.6 Drainage Mat:

.1 Randomly oriented geometric patterned drainage and ventilation mat designed to eliminate moisture vapour in wall applications with following characteristics:

.1 Thickness: 10 mm (0.40")

.2 Weight: 641 g/m2 (18.9 oz/yd2).

.3 Width: 1220 mm (48").

.4 Class A flame spread per ASTM E84.

.5 Hydrophobic compound.

.6 Resistant to chemical damage.

.7 Does not support mould growth.

.2 Basis of Design Product: Driwall Rainscreen 10mm by Keene Building Products, or approved equivalent, as accepted by the Consultant.

.7 Metal Lath:

.1 Standard: 1.4 kg/m2 (2.5 lb) galvanized expanded metal lath or 1.3mm (18 gauge) woven wire mesh, meeting ASTM C1063.

.8 Fasteners:

.1 Into Wood Studs: Minimum 3 mm (0.120") shank diameter galvanized nails, screws or staples of sufficient length to penetrate 35 mm (1-3/8") minimum into the stud.

.2 Into Metal Studs: Minimum 11.1 mm (7/16") head diameter, corrosion-resistant, self-drilling, self-tapping, pancake head screws of sufficient length to penetrate 10 mm (3/8") minimum into the stud.

.9 Sealants: As indicated in Section 07 92 00.

2.3 EMBEDDED FLASHING MATERIAL

.1 Flexible Flashing Membrane:

.1 Self adhering rubberized asphalt flashing; non-extruding composite flashing membrane compatible with vapour permeable air barrier; consisting of pliable, adhesive rubberized asphalt compound, bonded to a high density, cross laminated polyethylene film to produce an overall thickness of a minimum of 0.8mm (1/32") and specifically manufactured for use as a through wall flashing and damp course membrane.

.2 Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

.2 Metal Flashing: Provide metal flashing materials as follows:

.1 Fabricate through wall flashing with snap lock receiver on exterior face to receive counter flashing.

.2 Fabricate through wall flashing with drip edge by extending flashing 13mm (1/2") out

from wall, with outer edge bent down 30 deg and hemmed.

.3 Fabricate through wall flashing with sealant stop by bending metal back on itself 19mm (3/4") at exterior face of wall and down into joint 10mm (3/8") to form a stop for retaining sealant backer rod.

.4 Fabricate metal drip edges and sealant stops for ribbed metal flashing from plain metal flashing of same metal as ribbed flashing and extending a minimum of 75mm (3") into wall with hemmed inner edge to receive ribbed flashing and form a hooked seam; form hem on upper surface of metal so that completed seam will shed water.

.5 Fabricate metal drip edges for flexible flashings from stainless steel; extend a minimum of 75mm (3") into wall and 13mm (1/2") out from wall, with outer edge bent down 30 deg and hemmed.

2.4 MORTAR MATERIALS

.1 Cast Stone Masonry Units Mortar: Conforming to CSA A179, Type S Masonry Cement (1 bag), brick sand (3 to 1 ratio - brick sand to cement), Stone Mason Cement Bond (2 in 1 acrylic bonding agent) or equivalent, as accepted by the Consultant. Mix and ratio as per mortar manufacturer's written instructions for dosage requirements.

.2 Water: Potable (clean, exempt of ice, oils, acid, alkalis, organic matter, sediments or any other harmful matter).

.3 Aggregate:

.1 Conforming to CSA A179

.2 Use same brands of materials and source of aggregate for entire project.

.3 Use washed aggregate consisting of natural sand or crushed stone for mortar that is exposed to view.

.4 Cement: Normal portland, in accordance with CSA A3000, Type S.

SPEC NOTE: Delete the following paragraph if Precision Ledge stone style has been selected on this project, as Precision Ledge is laid using dry joint method of installation.

SPEC NOTE: Mountain Ledge stone style and Dry Stack stone style can be laid without the use of a grout joint, but StoneRox recommends the use of a grout joint for exterior applications, unless using the Precision Ledge stone style. Consult your local StoneRox representative when designing using a "dry laid" method of installation.

.5 Grout: In accordance with CSA A179.

SPEC NOTE: Delete the following paragraph if coloured grout is not required on the project.

.6 Coloured Cement: Packaged blend made from portland cement and lime and mortar pigments in accordance with specified requirements, containing no other ingredients, and as follows:

.1 Use non-staining masonry cement for cementitious portion of specified mortar type.

.2 Formulate blend as required to produce colour indicated or, if not indicated, as selected from manufacturer's standard colours.

.3 Coloured Portland Cement/Lime Mix:

.1 Colour: [List colour] [Colour [to match Consultant’s sample] [selected from manufacturer’s [standard] [custom] [complete] range]].

.2 Pigments shall not exceed 10% of portland cement by weight.

2.5 MORTAR MIXING

.1 Prepare and mix mortar materials under strict supervision and in small batches for immediate use only. Mix proprietary mortars in strict accordance with CSA A179. Do not use re-tempered mortars for coloured mortars.

PART 3:EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions:
- .1 Examine substrates to receive work and surrounding adjacent surfaces for conditions affecting installation. Coordinate with related sections to ensure proper dimensions are maintained.
- .2 All penetrations through the façade for the work of other trades shall be fitted with a watertight sleeve. Verify flashings are in place, sealed with waterproof membrane and covered with building membranes.
- .3 Maintain sheathing membrane integrity.

.2 Notify Contractor in writing of any conditions that are not acceptable.

.3 Proceed with installation after verification and correction of surface conditions acceptable to manufacturer.

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

.3 Surface Preparation: Follow manufacturer's instructions for the appropriate type of cast stone masonry and substrate.

3.3 SURFACE PREPARATION FOR INSTALLATION OF CAST STONE MASONRY

SPEC NOTE: Delete the following paragraph when installing cast stone masonry on concrete or masonry substrate.

.1 Fasten sheathing to exterior face of framed construction, using fasteners and fastener spacing as indicated in [Section 06 16 00 Sheathing][Section 09 29 00 Gypsum Board].

SPEC NOTE: Retain the following three paragraphs when designing a rain screen system, allowing the cavity pressure equalize and drain any moisture within the cavity.

.2 Install fully-adhered air barrier to sheathing as indicated in Section 07 27 00 Air Barriers, continuous around all penetrations, corners, and openings.

.3 Install thru-wall flashing with adhesive in accordance with manufacturer's written instructions, where indicated on drawings and, in the absence of any indication in locations, as follows:
- .1 First course above new grade line.

.2 Over exterior lintels and shelf angles.
.3 Under window sills.
.4 Wherever roofs or other exterior, horizontal surfaces intersect masonry walls, immediately above roof flashing or horizontal surface flashing and connect to roof, air barrier flashing strips or flashings.

.4 Install continuous metal drip flashing at all locations where thru-wall flashing occurs at wall face. Accurately miter metal drip flashings at all inside and outside corners and de-burr all sharp edges/corners. Insert metal drip flashing 50mm (2") into joint with drip edge turned down approximately 10mm (3/8") to present a neat, straight line appearance. Adhere thru-wall flashing to top surface of metal drip flashings. Tie in thru-wall flashing with air barrier membrane to ensure continuity of air barrier in accordance with local building code requirements.

SPEC NOTE: Delete the following paragraph when installing cast stone masonry on residential construction, or when cavity insulation is not required on the project.

.5 Install continuous cavity insulation in accordance with manufacturer's instructions with materials specified in Section 07 21 00. Fit courses of insulation between confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside substrate and fill cracks and open gaps in insulation.

3.4 INSTALLATION OF DRAINAGE MAT

.1 Install in accordance with manufacturer's instructions.

.2 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.

.3 Mechanically fasten using staples, large head nail, or washer and screw using one fastener for each 0.1 m^2 (1 ft^2). Do not fasten through flashing.

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

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

3.5 INSTALLATION OF METAL LATH

.1 Install in accordance with manufacturer's instructions.

.2 Cover entire surface of drainage mat with metal lath, and overlap all sectional pieces by a minimum of 50mm (2"), both horizontally and vertically.

.3 Fold lath tightly to fit around inside and outside corners and have seams minimum of 406mm (16") away from any corner.

.4 Attach lath using galvanized fasteners, at length to embed into studs, concrete and/or masonry a minimum of 32mm (1-1/4"). Space fasteners a minimum of 150mm (6") vertically and 406mm (16") horizontally, installing fastener into studs each time.

.5 Install fasteners on both faces of outside corners.

.6 Apply mortar scratch coat to nominal thickness of 13mm to 19mm (1/2" to 3/4") over metal lath surfaces. Work scratch coat into the holes of the metal lath and scrap off the excess.

.7 After curing, dampen previous coat prior to applying mortar and cast stone masonry veneer.

3.6 PREPARATION FOR INSTALLATION OF CAST STONE MASONRY

.1 Stone must be damp prior to placement by wet sponge.

.2 Clean all built-in items of loose rust, ice, mud, or other foreign matter before incorporating into the wall. All ferrous metal built into the wall shall be primed or galvanized.

.3 If required, provide temporary bracing during installation. Maintain bracing in place until building structure provides permanent support.

3.7 INSTALLATION OF CAST STONE MASONRY

.1 The Consultant recognizes that cast stone masonry product is subject to variations in colours, tones and textures.

.2 Select cast stone from several pallets, mix units from several pallets or cubes as they are placed, thereby distributing exposed cast stone veneer of varying colours, tones and textures evenly over wall surface to produce a uniform, slightly variegated blend of tones, colours and textures. Avoid placing units that are contrasting in appearance in close proximity to one another.

.3 Large variations in colour or texture between adjacent blocks of material will cause the Consultant to reject the installation, and the installer to rebuild the assembly at no additional cost to Contract.

.4 Install first course of cast stone masonry 100mm (4") above finished grade level, beginning with corners, alternating long and short legs, working towards the center of each wall.

.5 Size each stone to anticipate grout joint size, which vary depending on the cast stone masonry style selected. 10mm (3/8") grout joint is used for stone quantity calculations.

.6 Use special shaped stone units, shapes and profiles as indicated on drawings. Site cut corner stone sawn face is not acceptable unless accepted in advance by the Consultant.

.7 Place larger stone first then fill in gaps with smaller pieces or cut pieces. Place cut pieces above or below eye level for best appearance.

.8 Press each cast stone against mortar scratch coat, applying pressure to insure good bond. Continue pressure until mortar squeezes out from all sides of cast stone.

.9 Use chipped or blemished units only where the defect will be concealed; reject all defective and broken units or units with chipped edges or corners.

.10 Cut stone units with motor driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide a continuous pattern and to fit adjoining construction. Where possible, use full size units without cutting. Ensure cast stone is damp, using wet sponge, prior to cutting. Clean cut

units using a stiff fibre brush and clean water. Allow units to surface dry prior to placement.

.11 Install cut units with cut surfaces and, where possible, cut edges concealed. Where complex cutting is required, place mortar along the cut edge and trowel smooth to provide a consistent 13mm (1/2") wide gap.

.12 Lay work true to line and level. Accurately space courses. Keep bond plumb throughout. Corners and reveals shall be plumb and true. Check works regularly.

.13 Set cast stone units in accordance with manufacturer's recommended installation practices and materials. Review manufacturer's written recommendations with the Consultant before proceeding with installation.

.14 Where fresh stone veneer abuts or is built upon partially or fully set stone, clean the exposed surface and dampen to obtain bond.

SPEC NOTE: Delete the following paragraph if Precision Ledge stone style has been selected on this project, as Precision Ledge is laid using a dry joint method of installation.

3.8 GROUT MIXING

.1 Thoroughly mix grout ingredients in proper quantities needed for immediate use to requirements of CSA A179, and as recommended by the grout manufacturer.

.2 Add grout colour and admixtures to requirements of manufacturer's instructions.

.3 Provide uniformity of mix and colouration.

.4 Take representative samples for testing consistency of strength and colour according to CSA A179.

.5 Do not allow grout to harden on face of cast stone. Refer to manufacturer's instructions for thorough removal.

3.9 CONTROL JOINTS AND SEALING

.1 Control joints of a flexible caulking material shall be placed every 4877mm to 6096mm (16' to 20') apart, directly over existing control joints and/or where indicated on drawings, whichever is applicable.

.2 Cut cast stone masonry, where required, to install along each side of control joints.

.3 Seal joints around fixtures, pipes, penetrations or other fittings. Refer to Section 07 92 00 Joint Sealants.

.4 Sealant Colour: To match adjacent grout, unless otherwise indicated, as approved by the Consultant.

3.10 CLEANING

.1 Progress Cleaning: Leave work area clean at the end of each work day, ensuring safe movement of passing pedestrians.

.1 Clean cast stone as work progresses. Allow mortar droppings on stone to partially dry then remove by means of brushing with a stiff fibre brush.

.2 Clean cast stone using methods approved by the manufacturer. Do not use cleaning compounds, additives, soaps or detergents unless approved in writing by the cast stone manufacturer and accepted by the Consultant.

.3 Use of acids are not allowed. Test proprietary materials in small location to ensure that no damage or permanent staining resulting from the use of proprietary cleaning agents occurs.

.4 Do not use wire brushes or metal tools for cleaning, use fibre brushes.

.5 Do not wipe-off mortar or grout runs while wet. Wait until dry and then remove.

.6 Final Cleaning: At completion of installation, clean all surfaces so they are free of foreign matter using cleaners recommended by material manufacturer.

.7 Consult installation guide for use of concrete sealers.

SPEC NOTE: Delete the following paragraph when waste management is not required on the project.

.8 Waste Management: Co-ordinate recycling of waste materials and packaging at appropriate facility, diverting waste from landfill. Certified installer shall be responsible for ensuring waste management efforts are practiced.

3.11 PROTECTION

.1 Protect cast stone from damage resulting from subsequent construction operations.

.2 Use protection materials and methods that will not stain or damage cast stone.

.3 Remove protection materials upon Substantial Performance of the Work, or when risk of damage is no longer present.

END OF SECTION 04 72 00.