



## SECTION 04730

### MANUFACTURED STONE VENEER

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#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Manufactured Stone Veneer.
- B. Special decorative veneer stone shapes for trim.

##### 1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Concrete supporting wall.
- B. Section 04810 - Unit Masonry Assemblies: Masonry supporting wall.
- C. Section 05400 - Cold-Formed Metal Framing: Formed steel framed supporting wall.
- D. Section 05500 - Metal Fabrications: Shelf angles, structural supports, anchors and other built-in components for building into manufactured stone veneer masonry by this section.
- E. Section 06112 - Framing and Sheathing: Wood frame supporting wall.
- F. Section 07620 - Sheet Metal Flashing and Trim.
- G. Section 07650 - Flexible Flashing.
- H. Section 07900 - Joint Sealers: Sealant for perimeter and control joints.
- I. Section 09220 - Cement Plaster: Metal lath and scratch coat back-up over supporting walls.

##### 1.3 REFERENCES

- A. ANSI A118.4 - Specification for Latex-Portland Cement Mortar.
- B. ASTM C 91 - Standard Specification for Masonry Cement.

- C. ASTM C 67 - Test Methods for Sampling and Testing Brick and Structural Clay Tile.
- D. ASTM C 177 - Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- E. ASTM C 270 - Specification for Mortar for Unit Masonry.
- F. ASTM C 482 - Test Method for Bond Strength of Ceramic Tile to Portland cement.
- G. ASTM C 513 - Test Method for Obtaining and Testing Specimens of Hardened Lightweight Insulating Concrete for Compressive Strength.
- H. ASTM C 567 - Standard Test Method for Determining Density of Structural Lightweight Concrete.
- I. ASTM C 780 - Preconstruction Evaluation of Mortar for Plain & Reinforced Masonry.
- J. ASTM C 847 - Specification for Metal Lath.
- K. ASTM C 979 - Specification for Pigments for Integrally Colored Concrete.
- L. ASTM D 226, Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- M. UBC Standard 14-1-Kraft Waterproof Building Paper.
- N. UBC Standard 32-12 - Roof Tile.
- O. UL 723 - Test for Surface Burning Characteristics of Building Materials.
- P. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures.
- Q. ACI 530.1/ASCE 6/TMS 602 - Specifications for Masonry Structures.
- R. PCA - Portland Cement Plaster (Stucco) Manual.

#### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  1. Storage and handling requirements and recommendations.
  2. Installation methods.
  3. Cleaning methods.
- C. Design Data: Submit design mix when Property specification of ASTM C 270 is to be used, with required environmental conditions, and admixture limitations.
- D. Selection Samples:
  1. Manufactured Stone: For each product specified,
  2. Mortar: Two complete sets of mortar color samples representing manufacturer's full range of available colors.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### 1.5 QUALIFICATIONS

- A. Manufacturer:
  - 1. Company specializing in manufacturing products specified in this section with minimum five years documented experience.
  - 2. Licensee of Stonecraft.
- B. Installer: Company with documented experience in performing Work of this section.

#### 1.6 QUALITY ASSURANCE

- A. Certifications:
  - 1. ICBO Evaluation Service - Evaluation Report.
  - 2. NES Evaluation Service - Evaluation Report.
  - 3. HUD: Material Release Number.
  - 4. UL - Classification Listing.
  - 5. Canadian Central Mortgage and Housing Corp - Acceptance Report.
- B. Mock-Up: Construct sample panel at location indicated or directed, and as follows:
  - 1. Size: No less than 4 feet by 4 feet (1.2 m by 1.2 m).
  - 2. Include all stone unit types and sizes to be used including a typical corner condition, special shapes and mortar joint treatment. Clean the sample panel using the same materials and tools as planned for the final stone masonry construction.
  - 3. Obtain Architect's acceptance of sample panel before beginning construction activities of this section.
  - 4. Do not remove sample panel until construction activities of this section have been accepted by the Architect.
  - 5. Remove sample panel at the completion of the work.
  - 6. Sample panel may be incorporated into the work.
- C. Preconstruction Meetings: Conduct preconstruction meetings including the Architect, Contractor, stone masonry subcontractor, and the flashing subcontractor to verify project requirements, substrate conditions, manufacturer's installation instructions and other requirements. Comply with Division 1 requirements.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products on pallets in manufacturer's unopened packaging until ready for installation.
- B. Store manufactured stone materials on pallets on a dry level surface. Pallets shall not be stacked and shall be covered with tarps.
- C. Store mortar under cover and in an area where temperature is maintained between 4 degrees C (40 degrees F) to 43 degrees C (110 degrees F).

#### 1.8 PROJECT CONDITIONS

- A. Hot and Cold Weather Requirements: In accordance with ACI 530.1/ASCE 6/TMS 602 Specifications for Masonry Structures.
- B. Ambient temperature shall be 40 degrees F (4.4 degrees C) or above during erection of stone masonry. When ambient temperature falls below 50 degrees F, mortar mixing water shall be heated.

#### 1.9 WARRANTY

- A. Manufacturer's standard 50 year warranty from date of Substantial Completion. Warrantee includes coverage against defects in materials when installed in

accordance with manufacturer's installation instructions.

#### 1.10 EXTRA MATERIALS

- A. See Section 01600 - Product Requirements, for additional provisions.
- B. 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 MANUFACTURERS

- A. Acceptable Manufacturer: StoneCraft – Offered by Tapco, which is located at: 29797 Beck Rd. ; Wixom, MI 48393; Toll Free Tel: 888-580-6448; Fax: 800-228-3124; Email: [marketing@tapcoint.com](mailto:marketing@tapcoint.com); Web: [www.stonecraft.com/tapco](http://www.stonecraft.com/tapco)
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

#### 2.2 MANUFACTURED STONE VENEER

- A. Materials: Precast veneer units consist of portland cement, sand, lightweight aggregates, and mineral oxide pigments. Units are provided with the following physical properties:
  - 1. Physical properties:
    - a. Compressive Strength: 2,200 psi (15 MPa) when tested in accordance with ASTM C 513.
    - b. Shear Test: 50 psi (335 kPa) when tested in accordance with ASTM C 482.
    - c. Water Absorption: 22 percent when tested in accordance with UBC Standard 32-12.
    - d. Freeze-Thaw Test: 0.67 percent when tested in accordance with ASTM C 67.
    - e. Thermal Resistance: R0.60 (0.11) when tested in accordance with ASTM C 177.
    - f. Dry Density: 75 pcf (1200 kg per m3) when tested in accordance with ASTM C 567.
    - g. Fire Hazard: Flame spread 0 / smoke development 0 when tested in accordance with UL 723.
- B. Stone Units: Provide stone units with no noticeable repeat pattern on wall within 100 square feet (9.29 sm).
  - 1. Cobble: Cobble ranges in size from 4 inches (102 mm) to 21 inches (533 mm) in long and 2.5 (64 mm) to 12 inches (305 mm) high.
    - a. Canyon Gray.
    - b. Gray.
    - c. Mountain.
    - d. Valley Forge.
  - 2. Heritage: Heritage stone ranges in size from 2 inches (51 mm) to 10 inches (254 mm) in height and 4 inches (102 mm) to 17 inches (432 mm) in length.
    - a. Bucktown.
    - b. Chardonnay.
    - c. Ohio.
    - d. Old Ohio.

- e. Penn State.
  - f. Pennsylvania.
  - g. Tan.
  - h. Warm Spring.
  - i. Wisconsin.
3. Monarch: Monarch stone ranges in size from 4 inches (102 mm) to 19 inches (483 mm) in length and 3 inches (76 mm) to 18 inches (457 mm) in height.
    - a. Canyon Gray.
    - b. Mountain.
    - c. Pennsylvania.
    - d. Sandstone.
    - e. Valley Forge.
  4. Top Rock: Top Rock stone ranges in size from 3 inches (76 mm) to 21 inches (533 mm).
    - a. Brown.
    - b. Pennsylvania.
    - c. Realen.
    - d. Warm Springs.
  5. River Rock: River Rock stone ranges in size from 2 inches (51 mm) to 15 inches (381 mm).
    - a. Adirondack.
  6. Fieldstone: Fieldstone ranges in size from 2 inches (51 mm) up to 17 inches (432 mm) wide pieces with an average size of 7 inches (178 mm) to 9 inches (229 mm).
    - a. Bucktown.
    - b. Canyon Gray.
    - c. Colorado.
    - d. Mountain.
    - e. Pennsylvania.
    - f. Valley Forge.
    - g. Warm Springs.
  7. Quartz: Quartz stone is about 10 inches (254 mm) and can ranges in size from 4 inches (102 mm) to 20 inches (508 mm).
    - a. French Country.
    - b. Pennsylvania.
    - c. Valley Forge.
  8. Lakestone: Lake stone ranges in size from 2 inches (51 mm) to 18 inches (457 mm) in diameter with an average size of 8 inches (203 mm) to 12 inches (305 mm).
    - a. Calumet.
  9. Ledgestone: Ledgestone ranges in size from 3 inches (76 mm) to 21 inches (533 mm) in length and 1.5 inches (38 mm) to 5 inches (127 mm).
    - a. Bucktown.
    - b. Carolina.
    - c. Chardonnay.
    - d. Pennsylvania.
    - e. Tennessee.
    - f. Wisconsin.
- C. Accessories - available in only
1. Wainscot Sills: 3 inches (76 mm) by 20 inches (508 mm) by 1.5 inches (38 mm).
    - a. Color: Brown.
    - b. Color: Cream.
    - c. Color: Gray.
  2. Rock Face Sills: 19-3/4 inches (502 mm) by 2 inches (51 mm) by 3 inches (76 mm).

- mm).
- a. Color: Brown.
- b. Color: Cream.
- c. Color: Gray.
- d. Trim Color: Brown.
- e. Color: Cream.
- f. Color: Gray.
- 3. Hearthstones: 19 inches (483 mm) by 20 inches (508 mm) by 1.5 inches (38 mm).
  - a. Color: Brown.
  - b. Color: Cream.
  - c. Color: Gray.
- 4. Keystones: 10 inches (254 mm) by 8 inches (203 mm) by 5.5 inches (140 mm).
  - a. Color: Brown.
  - b. Color: Cream.
  - c. Color: Gray.
- 5. Light Box: 8 inches (203 mm) by 11 inches (279 mm) by 1.5 inches (38 mm).
  - a. Color: Brown.
  - b. Color: Cream.
  - c. Color: Gray.
- 6. Light Box: 4 inch (102 mm) diameter.
  - a. Color: Brown.
  - b. Color: Cream.
  - c. Color: Gray.
- 7. Receptacle Box: 7 inches (452 mm) by 8 inches (203 mm) by 1.5 inches (38 mm).
  - a. Color: Brown.
  - b. Color: Cream.
  - c. Color: Gray.
- 8. Receptacle Box: 2.5 inches by 4 1/8 inches by 1.5 inches (38 mm).
  - a. Color: Brown.
  - b. Color: Cream.
  - c. Color: Gray.

### 2.3 ACCESSORIES

- A. Expanded Metal Lath Paper Backed: ASTM C 847; galvanized, self furring mesh of weight to suit application; backed with paper.
- B. Expanded Metal Lath: ASTM C 847, galvanized, self-furring, minimum 2.5 lb or 18 gauge.
- C. Anchorage: Tie wire, nails, screws and other metal supports, galvanized, of type and size to suit application and to rigidly secure materials in place.
- D. Building Paper: ASTM D 226, Type 1, No. 15 non-perforated asphalt saturated felt.
- E. Building Paper: UBC Standard 14-1, kraft waterproof building paper.
- F. Concrete Bonding Agent: Thorobond water-based polyvinyl acetate type as approved by the manufactured stone manufacturer.
- G. Sealer: Water based silane or siloxane masonry sealer, clear finish.

### 2.4 MORTAR

- A. Masonry Cement: Complying with ASTM C 91:
  - 1. Type N.
  - 2. Type S.
  - 3. Color, gray.
  - 4. Color, white.
  - 5. Color \_\_\_\_\_.
- B. Masonry Cement: Polymer modified (latex) complying with ANSI A 118.4:
- C. Water: Clean and potable.

## 2.5 MIXES

- A. Mortar Mixes:
  - 1. Mortar for Structural Masonry: Complying with ASTM C 270, using Proportion Specification.
    - a. Type N.
    - b. Type \_\_ .
- B. Mortar Mixing:
  - 1. Mix mortar ingredients in accordance with ASTM C 270. Mix only in quantities needed for immediate use.
  - 2. Do not use anti-freeze compounds to lower freezing point of mortar.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Examine substrates upon which manufactured stone veneer will be installed.
- C. Do not begin installation until backing structure is plumb, bearing surfaces are level and substrates are clean and properly prepared.
- D. Verify that built-in items are in proper location, and ready for roughing into stone masonry.
- E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION FOR INSTALLATION OVER PLYWOOD SHEATHING

- A. Cover sheathing with moisture barrier with all joints lapped shingle style a minimum of 2 inches (52 mm). Lap vertical joints a minimum of 6 inches (152 mm).
- B. Install metal lath with small cups pointing upward. Apply metal lath taut, with long dimension perpendicular to supports. Lap ends minimum 1 inch (25 mm). Secure end laps with tie wire where they occur between supports.
- C. Attach metal lath to wood supports using galvanized nails or staples at maximum 6 inches (152 mm) on center vertically and 16 inches (406 mm) on center horizontally. Fasten with a minimum of a 1 inch (25 mm) penetration of the wood studs. Overlap lath at inside and outside corners 16 inch (406 mm).
- D. Place lath vertically above each top corner and each side of door and glazed frames.

### 3.3 PREPARATION FOR INSTALLATION OVER CONCRETE OR CONCRETE MASONRY

- A. Clean or sandblast concrete masonry to assure a proper mortar bond. Verify no bituminous, water repellent, or form release agents exist on concrete surface that are detrimental to mortar bond.
- B. Apply bonding agent in accordance with the manufacturers printed instructions.
- C. Install metal lath taut, with long dimension perpendicular to supports. Lap ends minimum 1 inch (25 mm) Secure end laps with tie wire where they occur between supports.
- D. Attach metal lath to concrete using galvanized concrete nails at maximum 6 inches (152 mm) on center vertically and 16 inches (406 mm) on center horizontally. Stop lath 1 inch (25 mm) from finished edges.
- E. Place lath vertically above each top corner and each side of door and glazed frames.

### 3.4 PREPARATION FOR INSTALLATION OVER METAL SIDING OR OPEN STUD

- A. Install paperbacked metal lath taut, with long dimension perpendicular to supports. Lap ends minimum 1 inch (25 mm) Secure end laps with tie wire where they occur between supports.
- B. Attach metal lath to support members using galvanized 1-1/4 inch (32 mm) type S-12 Panhead Super Tight Screws as manufactured by United States Gypsum. Screws shall penetrate a minimum of 3/8 inch (0.9525 cm) into the metal siding support members. Provide 1 fastener per SF of surface area and do not exceed 6 inches (152 mm) on center in any one direction.
- C. Place minimum 4 inch (100 mm) wide strips of metal lath centered over junctions of dissimilar backing materials. Secure rigidly in place.
- D. Place lath vertically above each top corner and each side of door and glazed frames.

### 3.5 SCRATCH COAT INSTALLATION

- A. Apply scratch coat in accordance with PCA Plaster (Stucco) Manual.
- B. Apply scratch coat to nominal thickness of 1/2 to 3/4 inch (12.5 to 19 mm) over metal lath surfaces.
- C. Moist cure scratch coat for minimum period of 48 hours.
- D. After curing, dampen previous coat prior to applying mortar and thin stone veneer.

### 3.6 PREPARATION FOR INSTALLATION OF THIN VENEER STONE

- A. Coordinate placement of reinforcement, anchors and accessories, flashings and other moisture control products supplied by other sections.
- B. 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.
- C. If required, provide temporary bracing during installation of masonry work. Maintain

bracing in place until building structure provides permanent support.

### 3.7 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install manufactured veneer stone and mortar in accordance with ACI 530.1/ASCE 6/TMS 602 Specifications for Masonry Structures.
- C. Maintain masonry courses to uniform dimension(s). Form vertical and horizontal joints of uniform thickness.
- D. Pattern Bond:
  - 1. Lay stone with the finished face exposed. If a color blend is being used, take care to avoid a concentration of any one color to any one wall surface.
  - 2. Maintain an approximate 1/2 inch (12.5 mm) joint, as stone allows.
  - 3. Do not use stacked vertical joints.
  - 4. Lay out work in advance and distribute color range of stone uniformly over total work area.
- E. Placing and Bonding:
  - 1. Dampen substrate as required to reduce excessive suction.
  - 2. Apply mortar in accordance with PCA Plaster (Stucco) Manual to a thickness of 1/2 to 3/4 inch (12.5 mm to 19 mm) Do not spread more than a workable area of 5 to 10 SF (.46 to .93 SM) so that mortar will not set before stone is applied.
  - 3. Lay manufactured veneer stone in a full bed of mortar with full joints.
  - 4. Work from the bottom up laying corner pieces first.
  - 5. Remove excessive mortar as work progresses.
  - 6. Do not shift or tap manufactured veneer stone after mortar has achieved initial set. Where adjustment is required, remove mortar and replace.
  - 7. Isolate top of manufactured veneer stone from horizontal structural framing members and slabs or decks with compressible joint filler and sealant in accordance with Section 07900.
- F. Joining Work: Where fresh masonry joints partially set masonry.
  - 1. Remove loose stone and mortar.
  - 2. Clean and lightly wet surface of set masonry.
  - 3. To avoid a horizontal run of masonry rack back 1/2 the length of stone in each course.
  - 4. Tothing is not permitted.
- G. Joints:
  - 1. Lay stone with an approximate 1/2 inch (12.5 mm) mortar joint, as stone allows.
  - 2. Tool joints when "thumb-print" hard with a jointer slightly larger than the width of the joint.
  - 3. Trowel-point or concave tool exterior joints below grade.
  - 4. Flush cut joints to be finished with a soft brush only.
  - 5. Retempering of mortar is not permitted.
  - 6. Use non-corrosive stone shims as required to maintain uniform joint thickness.
- H. Flashing:
  - 1. Clean surface of masonry smooth and remove any projections, which could damage flashings.
  - 2. Place flashing on a bed of mortar.

3. Cover flashing with mortar.
4. Provide weep vents at head joints placed every 16 inches (406 mm) along the first course immediately above flashing or as recommended by weep vent manufacturer.

- I. Control and Expansion Joints: Keep joints open and free of debris. Coordinate control joint in accordance with Section 07900 for sealant performance.
- J. Sealant Recesses: Provide open joint 3/4 inch (19 mm) deep and 1/4 inch (6 mm) wide, where masonry meets doors, windows and other exterior openings. Coordinate sealant joints in accordance with Section 07900 for sealant performance.
- K. Cutting And Fitting: Cut and fit for chases, pipes, conduit, sleeves, grounds, and other penetrations and adjacent materials. Coordinate with other sections of work to provide correct size, shape, and location.

### 3.8 FIELD QUALITY CONTROL

- A. Test mortar and grout in accordance with Section 01110.
- B. Testing of Mortar Mix: In accordance with ASTM C 780, Annex A4, for mortar aggregate ratio and ASTM C 780, Annex A5, for mortar water content.

### 3.9 PROTECTION

- A. Protect installed products until completion of project.
- B. Cover the top of unfinished stone masonry work to protect it from the weather.
- C. Extend cover a minimum of 24 inches down both sides and hold securely in place.
- D. Prevent staining of stone from mortar, grout, sealants, and other sources. Immediately remove such materials from stone without damage to the stonework.
- E. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface.
- F. Protect sills, ledges and projections from droppings of mortar and sealants.
- G. Touch-up, repair or replace damaged products before Substantial Completion.

### 3.10 CLEANING

- A. Keep the face of stone free of mortar as the work progresses. If residual mortar is on the face of the stone, allow to dry partially and brush the mortar off the surface and sponge off the residue.
- B. When the work is completed and the mortar has set for 2 to 3 days the surface may be cleaned from top to bottom using a mild masonry detergent acceptable to the stone manufacturer. Do not use metal brushes or acids for cleaning.

### 3.11 SCHEDULES

- A. :
  1. .
  2. .
  3. .

- B. :
1. .
  2. .
  3. .

END OF SECTION