

The following Quality Stone Veneer Specification Guideline should be used by architects to assist in the design and preparation of projects. Edit and remove sections that may not apply.

Ver. 6/19/24

CSI - 3 PART SPEC

SECTION 074243

MANUFACTURED STONE VENEER PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manufactured, Mechanically Fastened, Stone Veneer Panels.
2. Attachment components and accessories.

B. Related Sections:

1. Section 054100 – Structural Metal Stud Framing
2. Section 061000 – Rough Carpentry
3. Section 072500 "Weather Barriers" for air barrier membrane behind stone veneer panels.
4. Section 076200 "Sheet Metal Flashing and Trim" for field-formed flashings and other sheet metal work not part of stone veneer panel assemblies.
5. Section 079200 "Joint Sealants" for sealant materials used with stone veneer panels.

1.2 DEFINITIONS

- A. Clip System: Precast stone veneer concrete wall panels, attachment system components, integral flashings, and accessories necessary for a complete façade cladding system.
- B. Integrated Drainage System: ¼" air space between stone veneer façade and exterior substrate designed for wall breathability, allowing moisture to drain freely through the drainage plane, drainage channels, and weeps.

1.3 REFERENCES

- A. ICC Evaluation Service - International Code Council (ICC-ES); Birmingham, Alabama 800-423-6587
- B. American Society for Testing and Materials International (ASTM); Philadelphia, Pennsylvania. (215) 299-5420

Test Methods:

ICC-ES AC-51, Acceptance Criteria for Precast Stone Veneer

ASTM C67-03ae01, Standard Test Methods for Sampling and Testing Brick and structural clay tile.

1. ASTM C567-05a - Standard Test Method for Determining Density of Structural Lightweight Concrete
2. ASTM C39-99ae1, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
3. ASTM C192-81 Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
4. ASTM C109/C109M-02 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
5. ASTM C190-85, Standard Test Method for Tensile Strength of Hydraulic Cement Mortars
6. ASTM C348-86, Standard Test Method for Flexural Strength of Hydraulic Cement Mortars
7. ASTM C482-02, Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement Paste
8. ASTM C1670/C1670M-20a Standard Specification for Adhered Manufactured Stone Masonry Veneer Units

- C. National Concrete Masonry Association (NCMA); Herndon, Virginia. (703) 713-1900

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at project site prior to installation start.

1. Meet with owner, architect, stone installer, stone manufacturer's representative, and installer's whose work interfaces with or affects stone veneer wall panels, including installers of adjacent doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to stone veneer panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other adjacent construction that will affect stone veneer wall panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for stone veneer panel assembly during and after installation.
8. Review wall panel observation and repair procedures after stone veneer panel installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.5 SUBMITTALS

- A. **Product Data:** For each type of product indicated. Include manufacturer's product description, standard detail drawings, construction details, material descriptions, dimensions of individual components and profiles, installation instructions, and finishes for each type of stone veneer panel and accessory.
- B. **Shop Drawings:** Submit drawings with details demonstrating stone veneer panel installation, layout, profiles, dimensions, finish textures, finish colors, termination conditions, control joints, attachment system, penetrations, flashings, precast accessories; and special details.
- C. **Product Test Reports and Code Compliance:** Based on evaluation of comprehensive tests performed by a qualified, independent testing agency, for stone veneer product.
- D. **Samples:** For each stone type indicated, provide sample to show the full range of color and other visual characteristics in completed work.
 - 1. **Stone Veneer Panels:** A 2'x2' approximate portable size sample board should be submitted for each product specification.
 - 2. Include manufacturer's color selection charts showing the full range of colors available for each stone veneer product exposed to view.
 - 3. Include method of attachment.

1.6 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** All Stone Veneer Panels and system components specified in this section must be supplied by Quality Stone Veneer, Inc.

Quality Stone Veneer, Inc. Qualifications:

- 1. Is a turnkey stone veneer manufacturer and installer in business over 48 years, founded in 1976.
 - 2. Has 30 years' experience in the manufacturing of stone veneer.
 - 3. Provides an OSHA certified project field manager.
 - 4. Provides extensive company and jobsite safety programs including, but not limited to: scaffold safety, fall protection, personal protective equipment and an in house safety incentive program for all employees and subcontractors.
 - 5. Has a 50 year product warranty.
 - 6. Follows all updated guidelines set forth by the Masonry Veneer Manufacturer's Association.
 - 7. Services a national footprint across the United States.
- B. **Installer Qualifications:** Installer must have minimum 5 years' experience in the successful installation and completion of manufactured stone masonry work of similar scope to the given project.
 - C. Provide technical and design support as needed in regards to installation requirements and warranty.

- D. Product Testing Qualifications: Qualified in accordance with ASTM for testing indicated.
- E. Mockups: Build on-site mockup to demonstrate aesthetic effects and to set quality standards for materials and execution. Mock up to serve as final verification and approval on stone style, stone color, installation components, cast accessories and grout.
 - 1. Build mockups for typical exterior wall in sizes approximately 48 inches long by 48 inches high by full thickness.
 - 2. Include manufactured stone sill, banding, and accents as shown or required.
 - 3. Protect and retain sample as a basis for approval of completed manufactured stone work. Approved sample may be incorporated into completed work.
 - 4. Do not proceed with work until mockup is approved by project Architect or Design Manager.
- F. Sustainable Design Requirements: Evaluation to the following green codes or standards:
 - 1. 2016 California Green Building Standards Code (CALGreen), Title 24, Part 11 2015, 2012, and 2008 ICC 700 National Green Building Standard™
 - 2. Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of project site.
 - 3. Certify the source for local and regional materials and distance from project site.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Quality Stone Veneer, Inc.
 - 1. Stone Veneer Manufacturer's Material Test Reports: ICC-ES Evaluation Certified test reports showing compliance with specific performance or third-party listing documenting compliance to comparable code sections.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For stone veneer panels to include in maintenance manuals.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver installation components, stone veneer panels, and other manufactured items so as not to be damaged or deformed. Package materials for protection during transportation and handling.
- B. Store and handle products in manufacturer's unopened packaging until ready for installation in order to prevent damage from moisture, temperature or outside forces.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

1.10 SITE CONDITIONS

- A. Weather Limitations: Follow all manufacturers' recommended environmental conditions to ensure proper installation and finish results.
 - 1. Protection of Stone Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work.
 - 2. Protect base of walls from rain-splashed mud and mortar splatter using coverings spread on the ground and over the wall surface.
 - 3. Protect sills, ledges, and projections from mortar droppings.
 - 4. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
- B. Field Measurements: Field manager to verify dimensions of all stone veneer panel locations and wall openings prior to final material fabrication and delivery.

1.11 COORDINATION

- A. Coordinate stone veneer panel assemblies with rain drainage work, flashing, trim, and construction of studs, soffits, and other adjoining work to provide secure and water-tight installation.

1.12 WARRANTY

- A. Single Source Warranty by Quality Stone Veneer, Inc.
- B. Warranty Period:
 - 1. Quality Stone Veneer, Inc. Fifty (50) Year Product Warranty
 - 2. Quality Stone Veneer, Inc. Ten (10) Year Precast Accessory Warranty
 - 3. Quality Stone Veneer, Inc. One (1) Year Installation Warranty
- C. Stone Veneer Guarantee – Limited - When installed in accordance with the manufacturer's application specifications, Quality Stone Veneer unconditionally guarantees its stone veneer flats and corners to the original purchaser for a period of 50 years from the date of purchase. This warranty applies to all normal wear and tear applications. The warranty applies to the veneer units only and does not cover application replacement nor does it cover defects or damages resulting from or connected with misuse or improper installation.
- D. Accessory Stone Veneer Unit Guarantee – Limited - When installed in accordance with the manufacturer's application specifications, Quality Stone Veneer unconditionally guarantees its stone veneer accessory pieces to the original purchaser for a period of 10 years from the date of purchase. The warranty applies to the accessory units only and does not cover application replacement nor does it cover defects or damages resulting from or connected with misuse or improper installation.

- E. Guarantee – Limited - Quality Stone Veneer warrants that its product will endure in normal use if such application is installed according to the manufacturer's instructions. In the event of defects, the consumer must notify Quality Stone Veneer in writing. Upon receipt of such notification and after a factory representative inspection, Quality Stone Veneer will provide, free of charge, new materials to replace those products deemed to be defective. This warranty covers only manufacturing defects and the consumer is responsible for any labor costs incurred in replacement.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
Quality Stone Veneer, Inc.
 P.O. Box 117, 50 Refton Road
 Refton, PA 17568
 Phone: 717-786-3229
 Fax: 717-806-0961
 Web Site: www.QualityStoneVeneer.com
- B. Substitutions: **Not Permitted.**

2.2 MATERIALS

- A. Manufactured Stone Veneer Panels: Manufactured stone veneer panels intended for exterior or interior nonstructural lightweight veneer facing on masonry, metal, or frame construction for architectural beauty.
 - B. Large-format compact panels hand fabricated from mixture of Portland Cement and lightweight aggregates exceeding ASTM C39 and C192 Compressive Strength testing, with patented Clip System™ application to meet performance required in back ventilated façade cladding system. Include attachment system components and accessories required for complete assembly.
1. Basis-of-Design Product: Provide Quality Stone Veneer, Inc.; Patented Clip System™ Compatible line of Lambris™ stone veneer panels, Patent Numbers D712569 & D697394.
 2. Stone Profile selection as one of the following:
 - a. *Ohio Drystack Lambris* (Quality Stone Veneer, Inc.)
 - b. *Drystack Lambris* (Quality Stone Veneer, Inc.)
 - c. *Cobblestone Lambris* (Quality Stone Veneer, Inc.)
 - d. *Fieldstone Lambris* (Quality Stone Veneer, Inc.)
 - e. *Piedra Cortada* (Quality Stone Veneer, Inc.)
 - f. *Apilada* (Quality Stone Veneer, Inc.)
 - g. *Segovia* (Quality Stone Veneer, Inc.)
 - h. *Urbana Fusion* (Quality Stone Veneer, Inc.)

- i. *Urbana Travertine* (Quality Stone Veneer, Inc.)
 - j. *Siota Block* (Quality Stone Veneer, Inc.)
 - 3. Stone Veneer Color: As selected by architect/owner from manufacturer's full range of colors shown in current marketing materials and designated product pages at www.qualitystoneveneer.com
 - a. Color 1: <Insert color>.
 - b. Color 2: <Insert color>.
 - c. Color 3: <Insert color>.
 - d. Color 4: <Insert color>.
 - C. Panel Fixing System: Quality Stone Veneer, Inc. Patented Clip System™ Fastening Application with integrated drainage system. Patent No. D697394.
 - D. Composition: Quarried natural stones of varying sizes and shapes are used to make flexible molds. The molds are then painted with iron oxide pigments and filled with a mix of Portland Cement and lightweight aggregates. Filled molds are vibrated to integrate surface coloration. Mix in molds is raked to provide scratched surface texture on product back to insure installation bond where mortar and wire application is required. After stone mix sets, cast product is pulled from molds, cured, and packaged.
 - E. Sizes: Varied sizes, shapes, and textures of finished product duplicate natural stones used as mold masters. Stone diameters will vary. Right-angle corner stone have return lengths varying from 2.5 inches to 15 inches inside.
 - F. Weight: Installed weight is approximately 20 to 25 pounds per sq. ft. Weight will vary depending on stone styles, installation methods and substrate.
- 2.3 MISCELLANEOUS MATERIALS
- A. Fasteners for Clip System™: Include manufacturer's 20 Gauge Galvanized Metal Panel Clip. Minimum 2 Pieces per sq. ft. required to fasten stone veneer panels to wood framed substrate.
 - B. Flashing and Trim: Provide 22 Gauge Galvanized Metal Clip Starter Strip flashing. Locations include, but are not limited to base of stud walls, at horizontal floor to floor transitions as horizontal control and drainage, above windows, doors, and framed openings in stone veneer areas.
 - C. Galvanized Phillips Head Clip Screw for fastening Metal Panel Clip and Metal Clip Starter Strip.
 - D. Mortars: Polymer modified stone veneer mortar in compliance with ANSI A118.4 or ANSI A118.15. Used as a thin setting bed of mortar between each stone panel interlocking the stone together. Used in direct application (Traditional mortar and wire lath installation) areas when panels are installed over concrete. Used in adhering cast accessories such as window headers and sills. Used in jointing of stone and cast accessories when applicable.
 - E. Casing Bead: Casing bead used at vertical transitions from stone to windows, doors, and terminations in stone areas.

- F. Sealant: High Performance, Self-Leveling, 1- Part Polyurethane Sealant for caulking at expansion joints.
- G. Control and Expansion Joints – Galvanized Zinc Finish: Locate and install expansion joints at changes in wall heights, adjacent to changes in materials, and at spacing not to exceed 15 foot on center in any direction.

2.4 TECHNICAL DATA

- A. Applicable Standards: Professional Service Industries, Inc. – Project No. 812-50301.

Test Results:

- 1. Product Thickness: .15 ft.
- 2. Density (lbs. per cu. ft.): 82.2
- 3. Temperature hot side (F) 95 Degrees
- 4. Temperature cold side (F) 55 Degrees
- 5. Average mean Temperature (F) 75 Degrees
- 6. Thermal Conductivity (k) 1.569
- 7. Thermal Resistance (r) 1.148
- 8. Absorption (24 hours) 15.1%

- B. Applicable Standards: Underwriter’s Laboratories, Inc. – Project No. 05CA22150

Test Results:

- 1. (CFS) Calculated Flame Speed: 0
- 2. (FSI) Flame Spread Index: 0
- 3. (CSD) Calculated Smoke Developed: 5.9
- 4. (SDI) Smoke Developed Index: 5

2.5 PRODUCT SPECIFICATIONS

- A.

Standard	Quality Stone Veneer Specs
Manufacturer Experience	48 years
Organizational Membership	National Association of Home Builders (NAHB) & American Society for Testing & Materials (ASTM)
LEED Information	Manufacturing plants located in Lancaster, PA, and Tower City, PA
Warranty	50 years on product; 1 year on installation to original purchaser
Freeze-Thaw Durability	ASTM C 67 with less than 3% weight loss

Compressive Strength	All Cast Veneer Stone units exceed ASTM C39 and C192 with minimum of 1800 psi.
Shear Bond (Adhesion)	ASTM C482 with minimum of 50 psi.
ICC-ES Strength and Durability Tested	Meets or exceeds Report # ESR-3151
Water Absorption	15.1% when tested in accordance with ASTM C127
Thermal Resistance	ASTM C518-91 R factor = 1.148
Fire Hazard Test	UL 723
Density	8-12 pounds per square foot

2.6 PERFORMANCE REQUIREMENTS

- A. Wall Deflection Limits: For all products, including cast accessories:
 - 1. A minimum Design Deflection of L/360 is required.
 - 2. A Design Deflection of L/600 is recommended.
- B. Wall System Weight Requirement – Wall to receive stone veneer must be rated to support 20 lbs. per square foot minimum.
- C. Water Penetration: Water may pass through butt joints, but not through 2 layer 60 minute water resistive barrier.
- D. Wind Load: Expansion joints installed at horizontal floor to floor breaks in stone areas.
- E. Weather Resistant: No signs of cracks, checking or erosion observed after 2000 hours of aging.
- F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, stone veneer panel wall supports, and other conditions affecting performance of the Work.
 - 1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by stone veneer panel manufacturer.
 - 2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and tolerances required by stone veneer panel manufacturer.

3. Verify that water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Installation is not to begin until all substrates have been properly prepared prior to stone installation, including necessary flashings, transitions, flatwork and penetrations in stone areas.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Commencement of work by installer is acceptance of substrate.

3.2 PREPARATION FOR VENEER

- A. Install wall preparation materials in accordance with Manufacturer's instructions that being the most recent version of the National Concrete Masonry Association (NCMA) Installation Guide found at ncma.org.
 1. Install 22 Gauge Galvanized Clip Starter Strip flashing no less than 1" below base of stud walls, horizontal floor to floor transitions, above windows, doors, roof lines, and framed openings in stone veneer areas.
 2. Install two layers of weather resistive barrier (WRB) over the wall system, flashing properly around windows, doors, and other penetrations in stone veneer areas with self-adhered flashing tape.
 3. Verify that all items built in, under, or within other Sections are properly located and installed, including those set forth for stone veneer.

3.3 STONE VENEER PANEL INSTALLATION

- A. Clip System™ Installation: Install products in accordance with manufacturer's written instructions in orientation, sizes, and locations indicated on drawings. Install products in accordance with the latest installation guidelines, applicable building codes and other laws, rules, regulations and ordinances.
 1. Anchor panels and other components of the work securely in place. Attach flanges of wall panels to panel clips with manufacturer's standard fasteners.
 2. Adjust layout so that color variations between individual adjacent pieces are not visually distinct. Achieve a balanced pattern of shapes and colors by mixing the various size panels and textures of stone, and mixing panels from different boxes throughout the installation.
 3. Install flashing and trim as work proceeds.
- B. Fasteners: Use galvanized metal fasteners for surfaces exposed to the exterior and interior.
- C. Mortar and Sealant: Install joint mortar, and sealants to properly shed water and provide movement joints for optimum performance of stone veneer panel assemblies.

3.4 ACCESSORY INSTALLATION

- A. Install components required for a complete stone veneer panel assembly including trim, sills, headers, soldiers, capping and similar items. Coordinate installation with flashings and other components.

3.5 FIELD QUALITY CONTROL

- A. Fabricator's Field Service: Engage a manufacturer-authorized field representative to test and inspect completed stone veneer panel installation, including accessories.
- B. Stone Veneer wall panels will be considered defective if they do not pass tests and inspections.
- C. Reference: ASTM C1670/C1670 M – 20a

3.6 CLEANING AND MAINTENANCE

- A. Remove and replace any stone product if panels are installed differently than otherwise indicated in manufacturer's written installation instructions. On completion of stone veneer panel installation, clean finished surfaces as instructed by panel manufacturer. Maintain in a clean condition during construction.
 - 1. After stone veneer wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
 - 2. Replace stone veneer panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.
 - 3. When necessary, using a Quality Stone Veneer, Inc. provided stain finishing kit, spray to color any exposed cut edges of stone, or areas requiring a face color treatment. Only Quality Stone Veneer supplied finishing kits are to be used. Finishing kits are designed and provided based off the stone veneer color's original recipe.
- B. Cleaning: Most applications require no maintenance. The use of a high quality waterproofing sealer is recommended on any Quality Stone surface, but especially on those exposed to severe freezing or thawing, excessive moisture, or conditions which could discolor or stain the stone. A sealed surface is much easier to clean than an unsealed surface. We recommend that consumers have a sealant such as DECO 30 applied to Quality Stone Veneer.
- C. Applications where dirt or dust may accumulate can be washed occasionally using a garden hose and soft bristle brush. Do not use a wire brush. Use mild soap or detergent and water; rinse immediately with fresh water.
 - 1. To clean dirt or other particles from the stone, use a granulated type detergent mixed with water and a soft bristle brush.
 - 2. Use nonmetallic tools in the cleaning operations; do not use pressure washing nor an acidic cleaner on the manufactured products as this may damage or discolor the stone.

- D. Efflorescence is normal and common in all masonry products and easily remedied. To remove, allow stone to dry. Scrub with stiff bristle brush and clean water. If efflorescence is still noticeable, scrub with solution of 50% household white vinegar and 50% water and rinse thoroughly.
- E. Salt and Calcium Chloride Products: Do not use any of these products on areas adjacent to a stone veneer product.

END OF SECTION 074243