

SECTION 04700

**SIMULATED MASONRY
PART 1 - GENERAL**

1.01 SECTION INCLUDES

Note to Specifier: Select unit type in paragraph below

- A. Simulated **[stone]** **[brick]** masonry units including trim
- B. Building paper
- C. Metal lath and related accessories
- D. Scratch coat plaster
- E. Mortar

1.02 RELATED SECTIONS

Note to Specifier: Delete Sections which are not applicable in the paragraphs below, or add additional Sections, based on building construction.

- A. Section 03300 - Cast-in-Place Concrete
- B. Section 03400 - Precast Concrete
- C. Section 04220 - Concrete Masonry Units
- D. Section 05400 - Cold-Formed Metal Framing
- E. Section 06100 - Rough Carpentry
- F. Section 07620 - Sheet Metal Flashing and Trim
- G. Section 07900 - Joint Sealers

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)

Note to Specifier: Delete ASTM Standards which are not applicable in the subparagraphs below based on material selections in Part 2.

- 1. ASTM C39-01: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
- 2. ASTM C67-01: Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
- 3. ASTM C78-00 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
- 4. ASTM C91-99 Standard Specification for Masonry Cement

5. ASTM C150-00: Standard Specification for Portland Cement
6. ASTM C177-97: Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
7. ASTM C192-00 Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
8. ASTM C270-00: Standard Specification for Mortar for Unit Masonry
9. ASTM C482-81(1996): Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement
10. ASTM C847-95(2000): Standard Specification for Metal Lath
11. ASTM C897-00: Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters
12. ASTM D226-97a: Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

Note to Specifier: Clarify with Owner which of the following test methods has been used to test the product for burning; ASTM or UL ?

[13. ASTM E84-00a: Standard Test Method for Surface Burning Characteristics of Building Materials]

.....or

[13. Underwriters Laboratories, Inc. (UL): UL 723, Test for Surface Burning Characteristics of Building Materials.]

Note to Specifier: For compliance to national and regional building codes, contact the manufacturer for a list of building code evaluation reports, and insert evaluation report number and title below. Edit the remainder of the Section accordingly to conform with the appropriate evaluation report.

- B. Building Codes
1.

1.04 PERFORMANCE REQUIREMENTS

- A. When tested in accordance with the following standards, the simulated masonry shall meet or exceed the following performance requirements, except for special requirements specified herein:

SUMMARY OF TEST RESULTS

	<u>Average of Five</u>	<u>ASTM Specifications</u>
1. Compressive Strength (psi):	3,500	(ASTM:C67) 3,000 min.
2. Water Absorption (%):	15.5	(ASTM:C67) 25 max.
3. Freeze/Thaw (% weight loss after 50 cycles):	2.0	(ASTM:C67) 9.0 max.

Note to Specifier: Clarify with Owner which of the following test methods has the product been tested for burning; ASTM or UL ?

7. Fire Hazard Classification: [ASTM:E84] [UL:723]
 - a. Flame Spread: Zero.
 - b. Smoke Developed: Zero.

- c. Fuel Contribution: Zero.

1.05 SUBMITTALS

- A. Submit the following in accordance with Section 01330:
 - 1. Product Data: Manufacturer's materials description, installation, and maintenance instructions.
 - 2. Shop Drawings: Prepare shop drawings, including dimensioned building elevations, sections of each condition indicating masonry thickness, anchors and fasteners and their spacing, full details of accessories required, and adjacent construction.
 - 3. Test Reports: Submit manufacturer's test reports showing compliance with performance requirements.
 - 4. Samples: One sample panel not less than 18 inches by 24 inches (46cm by 61cm) with simulated masonry units in style specified, including corner units, and grouted in color specified.

1.06 QUALITY ASSURANCE

- A. Manufacturer: A firm regularly involved in the manufacture of simulated masonry units with not less than 5 years of successful experience.
- B. Installer: A firm authorized, licensed, certified or otherwise approved by the manufacturer to install simulated masonry units, and which has completed at least 3 projects of a similar size or larger than this Project.
- C. Mock-Up: Before starting simulated masonry work, construct a sample wall panel minimum 4 feet long by 4 feet high (1.2 meters long by 1.2 meters high) incorporating back-up construction and all exterior simulated masonry units specified, and representing the proposed color range, texture, bond pattern, mortar color and joint treatment, and workmanship for approval by the Architect.
 - 1. Erect sample panel facing Southwest or West in direct sunlight.
 - 2. Clean sample panel prior to review.
 - 3. Panel shall not be a part of the finished work, but shall remain at the Project site protected during the work and removed when directed, or upon completion of the work.
- D. Pre-Installation Conference: Prior to installation of simulated masonry and associated work, meet at Project site with installer, simulated masonry manufacturer's representative, installers of related work, and other entities concerned with simulated masonry performance, including Architect, and Owner, at their discretion. Perform thorough review of details, shop drawings, mock-up, materials and methods of installation. Record discussions and agreements and furnish copy to each participant. Provide at least 72 hours advance notice to participants prior to convening pre-installation conference.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver simulated masonry units and related materials to the Project site in manufacturer's protective cartons or packaging and store above ground protected. Damaged and otherwise unsuitable material when so determined shall be immediately removed from the Project site.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. TriLite Stone Inc.

305 – 13th Avenue; PO Box 308
Howard Lake, MN 55349

(320) 543-2254 or toll free (888)786-6626
(320) 543-2294 FAX
Website: www.trilitestone.com

Note to Specifier: In the paragraph below, edit the phrase "**Instructions to Bidders (AIA Document A701), Paragraph 3.3**", and substitute other applicable instructions to bidders as required.

- B. Other manufacturers seeking approval of their products must comply with requirements of the **[Instructions to Bidders (AIA Document A701), Paragraph 3.3] [other]** prior to bidding.

2.02 MATERIALS

Note to Specifier: Select unit type in paragraph below.

- A. Simulated Masonry Units: Lightweight, freeze-thaw resistant, precast **[stone] [brick]** "TriLite Stone Inc.".

Note to Specifier: Verify the following thickness.

1. Size: Approximately 1-3/4 inches (4.4cm) thick, random shaped.
2. Style and Model

Note to Specifier: Select the color and pattern from the paragraphs below.

Brick (TLS-3900-00):
(Length: 7.5", Width: 2.5", Thickness: 3/8")
Tumbled Grey (TLS-3900-02)
Tumbled Iron Range (TLS-3900-05)
Used Chicago (TLS-3900-07)
Tumbled Sandstone (TLS-3900-09)
Used Brick Charcoal (TLS-3900-11)
TumbledBrick Colonial (TLS-3900-13)
TumbledBrick Cloud (TLS-3900-15)

Mountain LedgeStone (TLS-4701-00) Optional – w/ Dressed Fieldstone:
(Length: 6-20", Width: 2-5", Thickness: 1.5-3.5")
Yukon (TLS4701-04-00)
Mist (TLS-4701-05)
Blue Ridge (TLS-4701-06)
Northern Creme (TLS-4701-09)
Buckskin (TLS-4701-11)
Carmel (TLS-4701-14)
Sienna (TLS-4701-20)
Bucks County (TLS-4701-30)
Onyx (TLS-4701-70)

Quarry Blend (TLS-4500-00):
(Length: 4.5-15.5", Width: 2-9.5", Thickness: 1.5-3")
Carmel (TLS-4500-02)
Cloud (TLS-4500-04)
Bucks County (TLS-4500-06)
Aspen (TLS-4500-08)
Caspian (TLS-4500-32)
Blue Ridge (TLS-4500-36)

Weatherledge (TLS-4800-00):
(Length: 7-18", Width: 1.5-8", Thickness: 1.5-2.5")
 Wisconsin (TLS-4800-02)
 Mountain Moss (TLS-4800-17)
 Adobe (TLS-4800-18)
 Arctic Sky (TLS-4800-20)
 Birch (TLS-4800-22)

Prairie LedgeStone (TLS-5600-00):
(Length: 6-18", Width: 2-5", Thickness: 1.5-2.5")
 Arctic Sky (TLS-5600-02)
 Chardonnay (TLS-5600-16)
 Rustic (TLS-5600-18)
 Bucks County (TLS-5600-30)
 Glacier (TLS-5600-31)
 Caspian (TLS-5600-32)
 Birch (TLS-5600-99)

California Blend (TLS-4300-00):
(Length: 4.5-20", Width: 2-9.5", Thickness: 1.5-3.5")
 Blue Ridge (TLS-4300-02)
 Northern Crème (TLS-4300-04)
 Carmel (TLS-4300-06)

Stackstone (TLS-4601-00):
(Length: 5-18", Width: 1.5-4.5", Thickness: 1.5-3")
 Mist (TLS-4601-05)
 Smokey Grey (TLS-4601-07)
 Northern Crème (TLS-4601-09)
 Adobe (TLS-4601-10)
 Buckskin (TLS-4601-11)
 Carmel (TLS-4601-14)

QuikStak LedgeStone (TLS 6500-00):
(Length: 5-18", Width: 4.88", Thickness: 1.5-2")
 Texas Crème (TLS-6500-01)
 Chestnut (TLS-6500-02)
 Onyx (TLS-6500-03)
 Cloud (TLS-6500-10)
 Shale (TLS-6500-15)
 Bucks County (TLS-6500-30)
 Quartz (TLS-6500-31)
 Silverado (TLS-6500-32)

Minnesota Limestone (TLS-4100-00):
(Length: 4.5-18", Width: 1.5-9.5", Thickness: 1.5-2.5")
 Ohio (TLS-4100-05)
 Sedona (TLS-4100-09)
 Buckskin (TLS-4100-11)
 Suede (TLS-4100-15)
 Sienna (TLS-4100-16)
 Cloud (TLS-4100-17)

European Limestone (TLS-5700-00):
(Length: 4-15.5", Width: 1.5-6", Thickness: 1.5-2.5")
Colonial (TLS-5700-05)
Sedona (TLS-5700-09)
Chardonnay (TLS-5700-16)
Bucks County (TLS-5700-30)
Caspian (TLS-5700-32)
Quartz (TLS-5700-33)

Hackett (TLS-4000-00):
(Length: 4.5-15.5", Width: 2-9.5", Thickness: 1.5-2")
Buff (TLS-4000-02)
Ohio (TLS-4000-05)
Smokey Grey (TLS-4000-07)
Colonial (TLS-4000-08)
Yukon (TLS-4000-09)
Bucks County (TLS-4000-30)

Castlerock (TLS-4550-00):
Buff (TLS-4550-02)
Colonial (TLS-4550-08)
Buckskin (TLS-4550-11)
Quartz (TLS-4550-12)
Cloud (TLS-4550-13)

Round Stones

River Rock (TLS-4300-00, All colors):
(Approximate Diameter: 3-12", Thickness: 3-5")
Lake Superior (TLS-4300-01)

Splitface (TLS-4400-00, All colors):
(Approximate Diameter: 2-16", Thickness: 1.5-2.5")
Lake Country Splitrock (TLS-4343-00)

Fieldstone (TLS-4200-00, All colors):
(Approximate Diameter: 5.5-14", Thickness: 1.5-2.5")
Buckskin (TLS-4200-09)
Bucks County (TLS-4200-30)
Caspian (TLS-4200-32)
Onyx (TLS-4200-70)

Alexandria Blend (TLS-4250-00):
(Approximate Diameter: 5-16", Thickness: 1.5-5")

Lake Country Splitrock (TLS-4343-00):
(Approximate Diameter: 5-16", Thickness: 1.5-5")

Country Squire (TLS-4050-00):
(Approximate Diameter: 5.5-14", Thickness: 1.5-2.5") Round Stones
(Length: 4.5-15.5", Width: 2-9.5", Thickness: 1.5-2") Square Stones
Aspen (TLS-4050-02)
Sienna (TLS-4050-04)
Wisconsin (TLS-4050-06)

***For additional selections and accessories, please visit our website: www.trilitestone.com**

B. Building Paper: Type I (No. 15) asphalt-saturated, non-perforated felt, ASTM D226.

C. Metal Lath: ASTM C847

1. Diamond Mesh: Self-furring expanded galvanized metal lath formed from copper bearing steel weighing between 2.5 lbs. per sq. yd. and 3.4 lbs. per sq. yd. (1.54 kg per sq. m.) with indentations if necessary to hold lath 1/4 inch (6mm) away from substrate and steel surfaces.

D. Casing and Stop Beads: Not less than 24 gage zinc formed with expanded wing unless otherwise shown.

E. Plaster Materials

1. Portland Cement: ASTM C150, Type I
2. Masonry Cement: ASTM C91, Type II of same manufacturer as Portland cement if optional mix is selected.
3. Aggregates for Portland Cement Plaster: Natural sand unless otherwise specified herein, complying with ASTM C897, except aggregate for base coat shall be graded within the following limits:

a.	Sieve Size No.	Percent (By Volume) Maximum	Passing Minimum
	8	0	90
	16	90	60
	30	70	35
	50	30	10
	100	5	0
	200	3	0

4. Fiber: Alkali-resistant glass fiber, 1/2 inch (13mm) long, "Dur-O-Fibar" (Dur-O-wal).
5. Water: Clean and free from impurities.
6. Liquid Additive: "Acryl 60" (Thoro, a subsidiary of ChemRex, Inc.).

F. Mortar Materials: Stone manufacturer's prepackaged Type N mortar, or site blended Type N and/or Type S mortar consisting of one part Portland cement, one part lime, and 6 parts sand; use stone manufacturer's prepackaged mortar color additive.

Note to Specifier: Delete the paragraph below if colored mortar is not applicable.

1. Mortar Color: Selected by the Architect from manufacturer's full range of available colors.

2.03 PLASTER AND MORTAR MIXES

A. Plaster

1. Scratch Coat: 1 part Portland cement, 1 part masonry cement, 4 parts sand, with 1 bag of fiber added per sack of cement.
2. Mixing Water: 3 parts water and 1 part liquid additive to reduce shrinking and cracking.

B. Mortar: Thoroughly mix mortar and grout fill ingredients in quantities needed for immediate use in accordance with ASTM C270.

1. Do not use antifreeze compounds.

2. If water is lost by evaporation, retemper within 2 hours of mixing. Do not retemper mortar after 2 hours.

Note to Specifier: Delete the paragraph below if colored mortar is not applicable.

3. **For colored Portland cement mortar, use the minimum quantity of color pigments to produce desired result. Premix color with the Portland cement in large controlled quantities.**

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which the simulated masonry work is to be installed, and notify the Contractor, in writing, of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until satisfactory conditions have been corrected.

3.02 INSTALLATION

Note to Specifier: Select unit type in paragraph below.

- A. Install simulated **[stone]** **[brick]** units in accordance with manufacturer's instructions and as specified herein.
- B. Over wall sheathing apply one layer of building paper beginning at the base of the wall, applied shingle style, followed by galvanized self-furring lath and 3/8 inch (9mm) thick scratch coat of plaster. Cross-scratch plaster upon attaining its initial set. Over cured scratch coat, set simulated stone in mortar with uniform joints throughout, concave tooled.
- C. Over masonry set simulated stone direct to masonry in full mortar.
- D. Remove and replace units which are loose, chipped, broken, stained and otherwise damaged, and if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

3.03 CLEANING

- A. Clean mortar droppings from exposed simulated masonry surfaces in accordance with manufacture's instructions.
- B. During the tooling of joints, enlarge voids and holes and completely fill with mortar. Point-up joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for installation application of caulking and sealant compounds.
- C. During the progress of the work, wipe off excess mortar as the work progresses. Dry brush at the end of each day's work.
- D. After mortar is thoroughly set and cured, dry clean simulated masonry units to remove large particles of mortar using wood paddles and scrapers. Use chisel or wire brush if required. Presoak wall by saturating with water and flush off loose mortar and dirt. Scrub down wall with stiff fiber brush and a solution of 1/2 cup (118.3 cc) of trisodium phosphate and 1/2 cup (118.3 cc) of household detergent dissolved in one gallon of water. Rinse walls by washing off cleaning solution, dirt and mortar crumbs using clean, pressurized water. Acid cleaning of masonry will NOT be permitted. Verify cleaning procedure with unit masonry and mortar manufacturers before beginning.
- E. At the conclusion of masonry work, remove scaffolding and equipment used in the work, clean up debris, refuse and surplus material and remove same from premises.

3.04 PROTECTION

- A. Protect simulated masonry materials during storage and construction against wetting by rain, snow and ground water, and against soilage and intermixture with earth and other types of materials.
- B. During erection, at the end of each day's work, during a shutdown, and during adverse weather conditions, cover tops of walls with strong non-staining waterproof membrane. Cover partially completed walls when work is not in progress. Extend cover 24 inch (61cm) down wall face and secure in place.

1. WALLS LEFT UNPROTECTED OR NOT PROPERLY PROTECTED MAY BE SUBJECT TO REJECTION, SUBSEQUENT REMOVAL, AND REPLACEMENT AT NO ADDITIONAL COST TO OWNER.

- C. Protect simulated masonry work from damage and against staining. Brace simulated masonry as necessary during construction.
- D. Protect simulated masonry work from excessive changes in temperature when protective shelters are removed. Changes in temperature of the masonry shall be as uniform as possible and shall not exceed 5 degrees F. (-15 degrees C.) in any 1 (one) hour, and 50 degrees F. (10 degrees C.) in any 24-hour period.