MODULO AMERICA

MANUFACTURER'S

BRICK INSTALLATION INSTRUCTIONS

Modulo Stone and Modulo Brick Installation Instructions are available separately from your dealer and can also be found at www.moduloamerica.com.

Building code requirements vary from area to area. Check with local authorities for building code requirements in your area. Carefully read all Installation Instructions before proceeding with your Modulo Brick products application. Observe safety precautions. Modulo Brick products are covered by a 50-Year Limited Warranty when installed in accordance with the manufacturer's Installation Instructions. See complete warranty on our website at www.moduloamerica.com.

ESTIMATING THE BRICK REQUIRED

Determine the amount of Modulo Brick products needed by measuring the area to be covered. Measure the length times the height to arrive at the gross square footage of flat area needed. Subtract square footage for window, door and other openings. Measure the linear feet of outside corners to determine the amount of corner pieces needed. One linear foot of corner pieces covers approximately 0.80 square feet of flat area. Subtract the flat area covered by the linear feet of corner pieces from the square footage of flat area required. You may wish to obtain some extra brick to allow for cutting and trimming.

FORMULAS

Wall Area = Length × Height

Window Area = Window Width × Window Height = Window Area

Wall Area Covered by Corners = Lineal Feet of Corners Required × 0.80

Square Ft. Flats Required = Wall Area − Window Area − Wall Area Covered by Corners

TOOLS REQUIRED

Choose the tools required for your installation—see page 2 for table with illustrations and appropriate use.

- Safety Glasses & other personal protective equipment
- Staple Gun or Hammer
- Hock & Trowel
- Margin Trowel
- Wide-Mouth Nippers or Hatchet
- Metal Jointing Tool or Wood Stick
- Whisk Broom
- Masonry, Circular, Table, Wet Saw or Grinder with Carborundum or Diamond Blade
- Wheelbarrow & Hoe
- Mason's Trowel
- Level
- Dust Mask(1)
- Grout Bag
- Hacksaw

Note: Cutting dust mitigation steps include but are not limited to: wet saw, dust vac system and respirator systems. OSHA may be required due to specific site conditions.

(1) **Caution:** Product contains Crystalline Silica. Dust from cutting or sawing may create possible cancer hazard. Dust may cause irritation of the nose, throat and respiratory tract. Avoid prolonged or repeated inhalation of dust. A properly fitted, particulate-filtering disposable NIOSH approved N-95 series face piece respirator ("dust mask") should be used when mechanically altering this product (e.g., sawing, cutting, drilling or similar dust generating processes). Wear a long-sleeved shirt, long pants, gloves and safety glasses with side shields when handling and installing material. Wash hands and face with soap and warm water immediately after handling.

MATERIAL SELECTION

WATER RESISTIVE BARRIER (WRB)

Select a material meeting one or more of the following standards:

- ASTM D226 Type 1 No.15 Asphalt Felt, intended for wall application
- ASTM E2556/E2556M
- ICC ES AC-38. Current Evaluation Report, by an ANSI accredited evaluation service, showing compliance to ICC ES Acceptance Criteria #38
- Liquid WRB/Air Barrier–Current Evaluation Report by an ANSI accredited evaluation service showing compliance to code requirements for WRB

LATH

Select a material meeting one or more of the following standards:

- ASTM C847, minimum 2.5 lb/yard expanded metal lath
- ASTM C847, minimum 3.4 lb/yard, 3/8" rib, expanded metal lath
- ASTM C1032, minimum 18 gauge, woven wire mesh
- ASTM C933, welded wire lath
- Non-metallic lath, with a current evaluation report, confirming compliance to ICC-ES AC 275 confirming alternative to one of the above lath products

All lath products must be self-furred, or use furring fasteners, to provide ¼" clearance between lath and substrate, for the purposes of mortar embedded encapsulating lath.

LATH FASTENERS

Select fasteners that meet the requirements of the following standard:

- ASTM C1063
  1. Galvanized nails, staples, concrete nails. Penetration depth into wood framing is ¾" minimum.
  2. Corrosion-resistant, self-drilling, self-tapping pancake-head screw with 7/16" head, of 1¼" length or suitable to obtain 3/8" penetration beyond inside surface of metal. (Used for installing to metal surfaces such as metal studs or metal building siding.)

MORTAR

Select a material meeting one or more of the following standards:

- ASTM C270 Type N or Type S
- ASTM C1714 Type N or Type S
- Mortar Admixtures: Comply with ASTM C1384
- Coloring Pigment: Comply with ASTM C979
- Bonding Agents: Comply with ASTM C1059 or C932
- ANSI A118.1 or A118.4

All mortar, additives, bonding agents and pigments must be stored, mixed and used in strict accordance with the manufacturer's instructions and appropriate standards referenced above.

Notes: Refer to MVMA Installation Guide Table 2 (www.masonryveneer.org) for additional guidance with mortar selection by application. Under mixing, over mixing, tempering and open times of mortar can impact bond. Follow mortar manufacturer's instructions.

SURFACE PREPARATION FOR MORTAR INSTALLATIONS

Using Table 1, determine the correct surface preparation for your installation.

SURFACE PREPARATION TABLE 1

WALL SYSTEM/BACK UP		PREPARATION REQUIREMENTS					
		CLEANING	2 LAYERS WRB	LATH	SCRATCH COAT	ROUGHEN/ TEXTURE	NOTES
WOOD FRAME 16"oc	**SHEATHING**		✓	✓	✓	N/A	
	PLYWOOD		✓	✓	✓	N/A	
	OSB		✓	✓	✓	N/A	
	CEMENT BOARD		✓	OPTIONAL	✓	N/A	Requires modified mortar to bond units. Proprietary coatings between bonding mortar & cement board may compromise warranty.
	WALLBOARD		✓	✓	✓	N/A	
	½" FOAM BOARD		✓*	✓	✓	N/A	
METAL FRAME 16"oc	**SHEATHING**		✓	✓	✓	N/A	
	EXTERIOR GYPSUM		✓	✓	✓	N/A	
	OSB		✓	✓	✓	N/A	
	PLYWOOD		✓	✓	✓	N/A	
	½" FOAM BOARD		✓*	✓	✓	N/A	
UNIT MASONRY (BRICK OR BLOCK)		✓**	OPTIONAL	OPTIONAL	OPTIONAL	SITE EVALUATION	Engineer review recommended for existing unit masonry.
POURED CONCRETE OR "TILT UP" CONSTRUCTION		✓**	OPTIONAL	OPTIONAL	OPTIONAL	✓	See ASTM C1780 for roughness evaluation.
OPEN STUD CONSTRUCTION			✓	✓	✓	N/A	48 hour scratch coat cure. Use paper backed 3.4 lb rib lath.
METAL BUILDING			✓	✓	✓	N/A	48 hour scratch coat cure. Use paper backed 3.4 lb rib lath.
SPECIAL CONDITIONS							
INTERIOR INSTALLATION		✓**	1 LAYER	✓	OPTIONAL		
CONTINUOUS INSULATION			✓*	✓	✓	N/A	See TER for lath fastener selection available for framed or masonry applications.
STUCCO		✓**	✓	✓	✓		Engineer review recommended for existing stucco.

Note: Optional surface preparation utilizing a rainscreen may be added. See **General Information** (page 8) for more information.

* Some foam products may qualify as WRB. See foam manufacturer instructions.

** Cleaning can be as simple as rinsing dust off the surface with clear water or as involved as bead blasting. You are removing form release agents, dirt, paint, sealers or anything that may inhibit bond. This process may also be the method to roughen the surface to create bond ready texture. See **ASTM C1780** for more information.

SURFACE PREPARATION FOR MORTAR INSTALLATIONS (CONTINUED)

FIG. 1

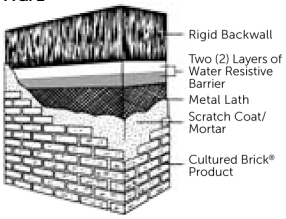


FIG. 2

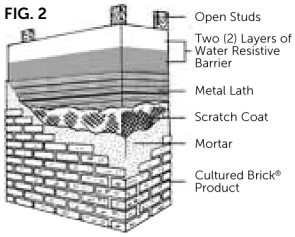


FIG. 3

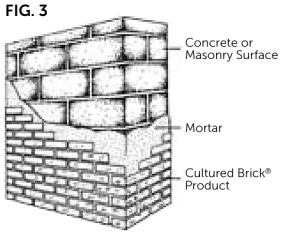
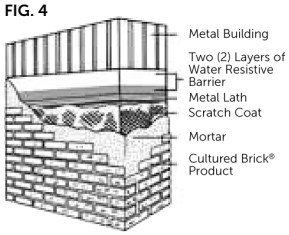


FIG. 4

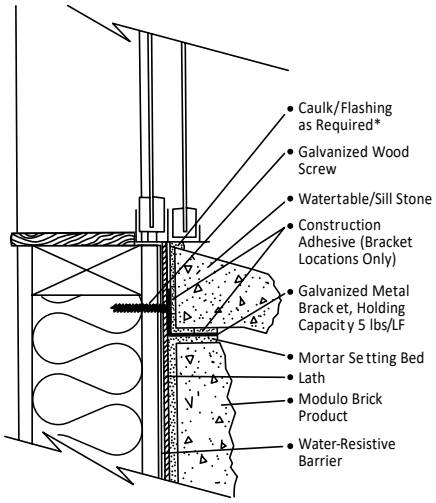


INSTALLING MODULO BRICK

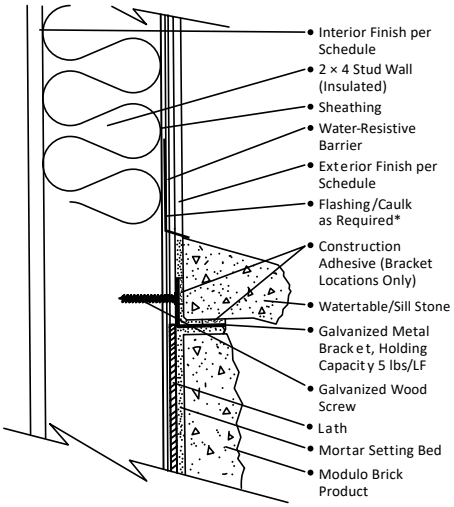
WATERTABLE/SILL INSTALLATIONS

Watertables/sills provide a transition piece between a stone wainscot and other exterior finishes and for water runoff. They can also be used as a windowsill. Install using galvanized metal support brackets (Simpson Strong Tie A-21 or other galvanized right angle bracket with holding capacity minimum 5 lbs/LF) fastened with galvanized nails or screws penetrating studs 1" at a minimum of 16" on center. Two brackets per sill is preferred if blocking is present. Use construction adhesive to bond stone at bracket locations. Caulk and flash as required at watertable/ sill locations using an approved corrosion-resistive flashing that extends to the surface of exterior wall finish and is installed to prevent water from re-entering the exterior wall envelope.

Windowsill Cross Section



Wainscot Cross Section

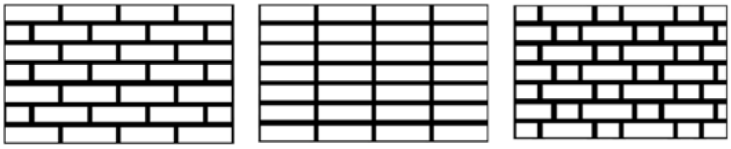


CLEARANCE

Maintain a 4" clearance between Modulo Brick and grade or 2" clearance above a paved surface. Most building codes require the use of a weep screed in framed applications. In framed applications, this distance is measured from the “beak” of the weep screed. When a weep screed is not required—application over masonry as an example—a 2" × 4" leveling/ ledger board may be used as a temporary level straight edge to start your installation. See the MVMA Installation Guide for conditions that allow a reduction in clearance requirements.

LAYOUT BRICK PATTERN

Choose the type of wall pattern desired. Allowing for a mortar joint of approximately ½," calculate and mark off the number of courses required. Adjust joint size to minimize horizontal cutting. Run level guide lines to ensure proper placement of bricks.

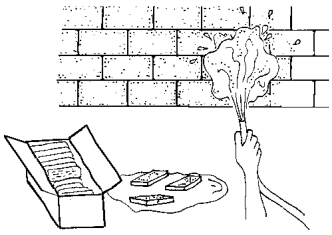


Running Bond | Stack Bond | Flemish Bond

Mix brick from several boxes at a time to achieve a pleasing blend of color and texture.

WETTING EXTERIOR WALLS

Dampen concrete, masonry or stucco wall surfaces with water prior to the application of the brick.



WETTING THE BRICK

The back of the brick should be completely damp, but free from surface water at the time of application. If using a modified mortar, follow manufacturer's recommendations regarding wetting of brick and scratch coat.

MORTAR & WEATHER CONDITIONS

If brick is being applied in hot or dry weather, the back of each piece should be moistened with a fine spray of water or a wet brush to adequately prevent excessive absorption of moisture from the mortar. If being installed over concrete, masonry or scratch coat substrate, the substrate surface area should also be dampened before applying mortar. Surfaces should appear damp but free of surface water. Applications should be protected from temperatures below 40°F as mortar will not cure properly under such conditions. See ASTM C1780 for Hot & Cold Weather Requirements.

APPLYING MODULO BRICK UNITS

STARTING POINT

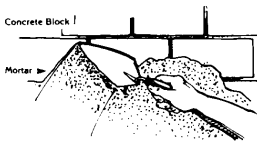
Apply mortar and brick working from the bottom up, or from the top down. Working from the top down may help avoid splashing previously applied brick with dripping mortar.

APPLYING MORTAR TO PREPARED SURFACE AREA

Using a plasterer's or mason's trowel (Fig. 5 & 6), apply mortar ½" to ¾" thick to prepared surface area. Do not spread more than a workable area (5 to 10 sq. ft.) so that mortar will not "set up" before brick is applied.

FIG. 5

FIG. 6



SETTING UNITS

Units should be installed with complete coverage of the back of the unit and full contact between the mortar setting bed, unit and prepared backing surface.

FIG. 7

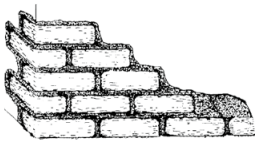
Back butter the unit, using sufficient mortar and pressure to fill texture and voids in the back of unit (Fig. 7). While ½" to ¾" setting bed mortar is wet, press and work the unit onto the prepared backing with enough pressure to force mortar to squeeze out around the entire perimeter of the unit.

Note: In tight fit applications, before placing next unit, compact or remove the squeezed out mortar to allow adjoining unit to butt tightly. There shall be mortar between the units but the joint will be less than 3/8".

INSTALL CORNER PIECES FIRST

If your application requires corner pieces, apply these first. Notice that the corner pieces have a long and a short leg. Alternate these in opposite directions (Fig. 8).

FIG. 8

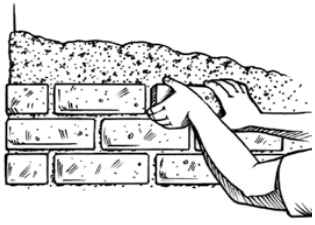


INSIDE CORNERS

When using a running bond, set full bricks to half bricks at inside corners, alternating lengths in each course.

INSTALL FLAT BRICK

Start at the end of the wall to complete one horizontal course of brick. Work across the surface area one course at a time. Keep courses level and plumb by using a carpenter's level to check each course as it is laid.

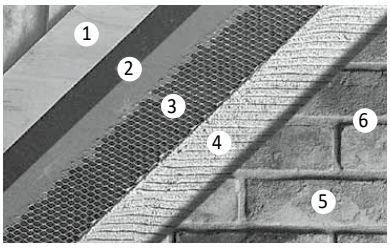


KEEP YOUR MORTAR JOINTS CONSISTENT

Place the individual bricks close together, creating ½" uniform joints between them. Cut trim as required to achieve consistent width in the mortar joints.

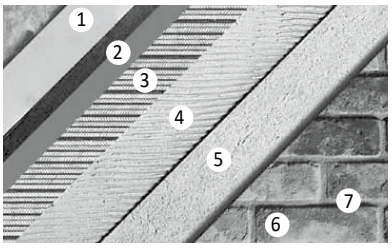
TYPICAL INSTALLATIONS

WOOD FRAME



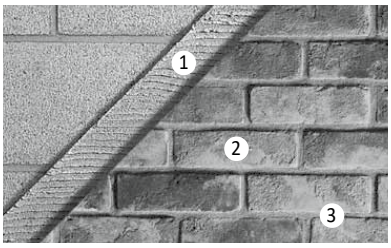
In sequence: (1) sheathing, (2) two layers of water resistive barrier (WRB), (3) galvanized metal lath, (4) mortar, (5) Modulo Brick thin veneer, (6) mortar joint.

RIGID FOAM INSULATION



In sequence: (1) rigid foam insulation, (2) two layers of water resistive barrier (WRB), (3) metal lath, (4) scratch coat, (5) mortar setting bed, (6) Modulo Brick thin veneer, (7) mortar joint.

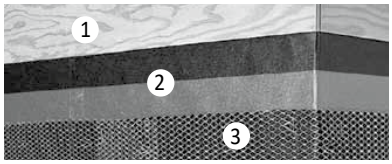
MASONRY OR CONCRETE



In sequence: (1) mortar applied directly to untreated, unpainted masonry, concrete or stucco, (2) Modulo Brick thin veneer, (3) mortar joint.

CORNER PREPARATION

Water resistive barrier and lath must continuously wrap a minimum of 16" at outside/inside corners and fasten at a framing member. Lap water resistive barrier a min. 4" at vertical and 2" at horizontal lap joints. Lap lath a minimum of 1" at vertical and horizontal seams. In sequence: (1) wall substrate, (2) two layers of water resistive barrier, (3) metal lath.



GROUTING & FINISHING JOINTS

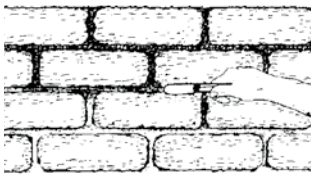
Grouting Joints

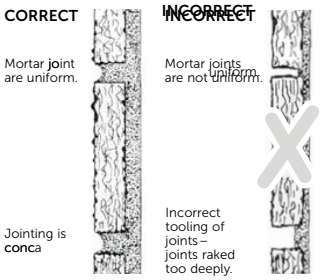
Use a grout bag to fill in joints. Care must be taken to avoid smearing mortar on brick. Accidental smears or mortar droppings should be removed only after mortar has become crumbly. Use a whisk broom or dry bristle brush. Never use a wet brush or wire brush.

Finishing Joints

When the mortar joints have become firm ("thumb print" dry), they should be pointed up with a metal jointing tool. Rake out excess mortar, compact and seal edges around bricks. (Setting time will vary depending on wall surface and climatic conditions.)

FINISH MORTAR JOINTS WITH A JOINTING TOOL.





GENERAL INFORMATION

CLEANING

Dirt, etc., may be removed by using a solution of granulated soap or detergent and water with a bristle brush. Do not use a wire brush as it will cause damage to the surface. Rinse immediately with fresh water. Do not attempt to clean using acid or acid-containing products, power-washing, sandblasting or wire-brush cleaning.

ENHANCED BOND

Refer to MVMA Installation Guide Table 2 for application specific mortar recommendations. Pre-blended modified mortars, bonding agents and enhancers may provide greater bond strength. Enhanced bond strength capability may be desired for tight fit applications, tilt up construction or where code jurisdictions require higher bond strength. These products must be compatible with manufactured stone and used in strict accordance with manufacturer's instructions. These products may also have specific requirements regarding hot or cold weather, exposure to rain/water while curing or water used to dampen the stone units prior to installation.

SALT & DE-ICING CHEMICALS

Because concrete and masonry are vulnerable to damage by salt, Modulo Brick products are not warranted against damage incurred from salt or other chemicals used to remove snow or ice. Do not use de-icing chemicals on areas immediately adjacent to a Cultured Brick manufactured brick veneer application.

SCUFFING

Scuffing occurs on all natural veneer. Occasionally some scuffing will occur on the surface of Modulo Brick products. This can enhance the natural appearance of your Modulo Brick installation. Some scuff marks can be removed by cleaning as described above.

EFFLORESCENCE

Efflorescence is a water-soluble salt that is deposited on the surface of stucco, concrete, brick and other masonry products by the evaporation of water from the wall. On rare occasions efflorescence will occur on Modulo Brick products. To remove efflorescence, allow the stone to dry thoroughly, then scrub vigorously with a stiff bristle brush and clean water. Rinse thoroughly—do not use a wire brush. For more difficult efflorescence problems, scrub thoroughly with a solution of 1 part white household vinegar to 5 parts water. Rinse thoroughly.

WATER REPELLENT TREATMENTS/SEALERS

Sealers are not necessary on Modulo Brick products. However, some customers use sealers to help prevent staining in applications prone to smoke, soot, dirt or water splashing. If you choose to use a sealer, make sure it is a Silane, Siloxane or Silane-Siloxane blend breathable sealer. Take note that sealers may darken the color of the stone. A sealer may also slow the natural movement of moisture out of the stone and increase the possibility of efflorescence and/or spalling. For information regarding actual performance or application of sealers, contact the manufacturer of the sealer directly.

RAINSCREEN STATEMENT

Some building codes require a rainscreen behind cladding materials, including manufactured stone veneer. If you are installing manufactured stone/brick veneer in one of these jurisdictions, or are concerned about extreme weather conditions, it is recommended that you choose a rainscreen system that can achieve the following:

- The system should create a space with a minimum depth of $^{3}/_{16}$" (5 mm) & max depth of ¾" (19 mm).
- The materials should be corrosion and rot resistant.
- Unless otherwise designed to manage moisture vapor with ventilation, the rainscreen system should be vapor open.
- If rainscreen space is created with a material other than solid strapping/ furring attached directly to framing, the following must be considered. Lath fasteners must be capable of supporting the weight of the finished wall cladding system considering the unsupported/cantilevered portion of fastener that is equal to the thickness of the rainscreen materials.

OVERHEAD APPLICATION

Overhead, horizontal or sloped applications are not included in our building code evaluation reports or acceptances. These applications often require special approval/inspections by local building code inspectors. Contact your architect or engineer for assistance designing these installations.

INSTALLATION OVER THICK FOAM

Installation over foam board thicker than ½" may require special fasteners. Consult your architect or engineer for assistance designing a thick foam installation.

USE OF MODULO BRICK BELOW WATER LEVELS

Modulo Brick is a lightweight concrete material and will not deteriorate from exposure to fresh liquid water. The use of Modulo Brick below water level, in which the water is chlorinated, treated with chemicals or dirty, will likely cause discoloration as it would on any concrete, natural stone or other material. Pool chemicals which contain acid, such as muriatic acid, may cause damage to Modulo Brick, which would not be covered by the 50-Year Limited Warranty. Modulo Brick and many other materials are subject to potential damage from adverse freeze thaw conditions. For that reason, water should be drained below susceptible materials prior to freezing temperatures. Pressure and abrasion from constant fast flowing water may cause some surface deterioration as it would on other concrete materials. The surfaces of concrete and many other materials may be affected by exposure to extensive saltwater conditions. Modulo Brick should not be considered a waterproof material.

CAPPING OFF EXPOSED TOP OF EXTERIOR WALLS, CLADDING TERMINATION OR TRANSITIONS

To achieve a finished architectural look on horizontal or sloping top areas of exterior walls, piers, retaining walls or other surfaces, Modulo Stone capstones or a poured-in-place concrete cap must be used to provide adequate run-off protection to the wall areas. Caps should extend approximately 1"–2" beyond the finished stone surface. Sill stones, flashings or band boards provide overhang at cladding terminations or transitions. Note: Modulo Stone corner pieces, flat pieces, or hearthstones should not be used to cap walls.

RETAINING WALLS

All retaining walls must be waterproofed at the fill side. Wall construction should incorporate proper use of granular backfill and provisions for good drainage. A continuous longitudinal drain along the back of the wall set in drain rock is recommended.

CHIMNEY CAP

All chimney chases must be capped with a one-piece cap that extends 1"–2" beyond the finished stone surface to prevent water from entering the wall system. Chimney or chase construction should incorporate proper flashing.

50-YEAR LIMITED WARRANTY

For complete details of the Modulo Brick 50-Year Limited Warranty please visit www.moduloamerica.com.

ACCEPTANCE REPORTS & LISTINGS

ICC-ES AC51. Tested by Applied Testing & Geosciences, LLC. AGT Report No: AC51-081616-12167-411

ASTM E 84-17a. Tested by Exova Warringtonfire North America. Repot No: 18-002-176(A)

For complete reports please visit our website at www.moduloamerica.com

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