



# INSTALLATION GUIDE

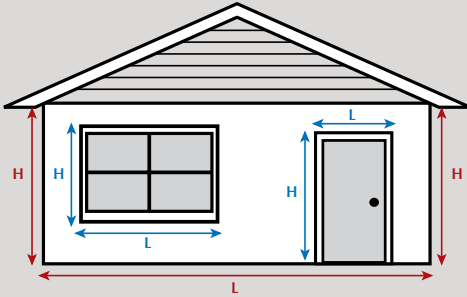


## HOW MUCH STONE DO YOU NEED?

Just follow these easy steps to determine how much Daltile Manufactured Stone you will need:

### TO ORDER CORNERS (LINEAR FEET):

1. Determine how many linear feet of 90 degree outside corner pieces you will need. See Illustration below. (H)



$$L \times H \text{ (WALL)} - \{ L \times H \text{ (WINDOW)} + L \times H \text{ (DOOR)} \} = \text{SQUARE FOOTAGE}$$

### TO ORDER FLATS (SQUARE FEET)

1. Measure the width and the height of the area to be covered and convert to square footage (width x height = square footage).
2. Figure the square footage of any windows and doors and subtract this amount from the first figure (total square footage – windows and doors). See Illustration A above.
3. Measure the linear feet of outside 90 degree corner pieces and convert to square feet. One linear foot of corners will cover about 1/2 square foot of flat area – ie, 20 linear feet of corners = 10 square feet of flat area. Subtract this flat area amount from the total square feet to determine how much total stone you will need. You should allow an extra 5 to 10% stone for cutting and trimming.

## WHAT TOOLS WILL YOU NEED?

- **HAMMER:** Used for applying felt paper and metal lath.
- **WHEEL BARROW & HOE OR BUCKET & DRILL PADDLE:** Used for mixing mortar mix.
- **NOTCHED FLOAT OR FLOAT & RAKE:** Used for applying scratch coat to metal lath and raking scratch coat.
- **CIRCULAR SAW WITH MASONRY BLADE:** Used for cutting stone.
- **MASON'S TROWEL:** Used for applying mortar to Daltile Manufactured Stone.
- **GROUT BAG:** Used for grouting joints.
- **JOINTING TOOL:** Used for finishing mortar joints.
- **WHISK BROOM:** Used for cleaning joints and stone.



 <p><b>OR</b></p> <p>Hammer and Nippers or a Circular Saw with a masonry blade to cut and trim stone or brick. Hammer is also used to apply metal lath.</p>	 <p>Staple Gun and Staples to apply felt paper in exterior applications.</p>	 <p>Grout Bag for grouting joints.</p> <p>Jointing Tool (optional), Stick or back of Trowel Handle to remove excess mortar from joints</p>
 <p><b>OR</b></p> <p>Wheelbarrow &amp; Hoe or Bucket &amp; Drill Paddle for mixing mortar.</p>	 <p>Level and Tape Measure to help create level and straight joint lines.</p> <p>Margin Trowel to apply mortar to the back of stone or brick.</p>	 <p>Notched Float to apply mortar coat.</p> <p>Safety Glasses</p> <p>Whisk Broom for cleaning joints Safety Glasses and stone.</p> <p>Dust Mask</p>

# MATERIALS YOU WILL NEED

## MATERIALS NEEDED FOR INSTALLATION - OVER MASONRY

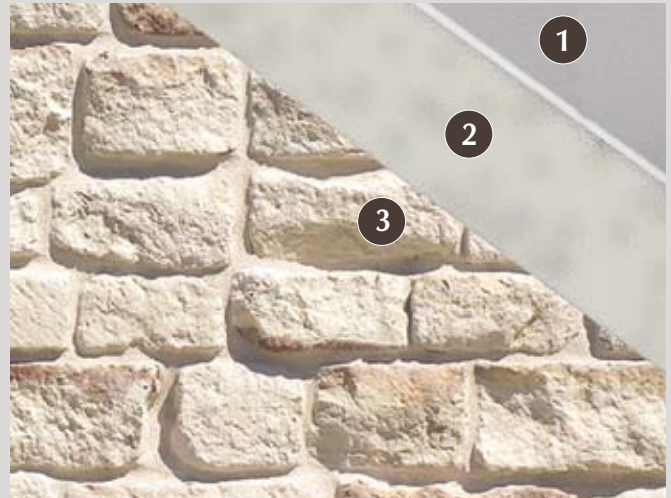
If installing Daltile Manufactured Stone over existing masonry (brick, block, stucco, or concrete that is sound, clean, not painted or sealed, free from form oil, dust, and dirt):

**MORTAR:** Used to set stones, and to grout the mortar joint between stones. You may use premixed masonry mortar, masonry cement and sand, or portland cement, lime, and sand.

- **MASONRY CEMENT:** Mix 1 part masonry cement (Type N or Type S) with 2 1/4 parts masonry sand and potable water or
- **CEMENT/LIME:** Mix 1 part Portland cement, 1 part lime, and 4.5 parts sand or
- **PREMIXED MORTAR:** Check with the manufacturer to determine if their product is suitable for installation of manufactured stone (building requirement of 50 psi shear bond strength).

**BONDING AGENT:** Latex brush-on or integral bonding agent recommended for this application.

**MASONRY SEALER:** Use a breathable type, non-film forming sealer. Dry stack applications (mortarless joint) should be sealed.



### SHOWN IN SEQUENCE:

1. Concrete, Brick, Block, Stucco or Masonry
2. Bonding Adhesive on Wall and in Mortar
3. Daltile Manufactured Stone or Thin Brick and Grout

## MATERIALS NEEDED FOR INSTALLATION - OVER FRAMING

If installing Daltile Manufactured Stone over framing (wood or metal) with sheathing (plywood, OSB, rigid insulation, gypsum wall board, concrete board, fiber board):

**WATER RESISTIVE BARRIER:** Used to prevent moisture from penetrating the exterior wall.

Daltile Manufactured Stone recommends two separate layers of WRB:

**USE:** 15# felt (ASTM D226 no. 15 type 1) or  
Grade D Paper (ICC-ES Acceptance Criteria AC 38) or  
House Wrap (ICC-ES Acceptance Criteria AC 38)

\*1 layer of House Wrap or felt and 1 layer of paper backed lath meets the requirement for two layers of Water Resistive Barrier.

**METAL LATH:** Used to hold mortar when forming a mortar scratch coat. Use a minimum 2.5 lb. self-furring corrosion resistant metal lath or 18 gauge galvanized woven wire mesh. For metal buildings or open studs, use a galvanized, rib expanded metal lath (minimum 3.4 lb. / yd<sup>2</sup>). Check your local building codes for other acceptable lath or mesh.

**FASTENERS:** Used to attach lath to the framing members to support the stone system. Use corrosion resistant fasteners (ASTM C 1063) capable of penetrating wood studs 1" or metal studs 3/8". Screws or nails should have a 7/16" head or washers to prevent pulling through the lath.

**MORTAR:** Used to make a mortar scratch coat, to set stones, and to grout the mortar joint between stones. You may use premixed masonry mortar, masonry cement and sand, or portland cement, lime, and sand.

**NOTE:** For new construction exterior applications, ensure that all penetrations (doors, windows, etc.) are properly flashed and sealed in accordance with manufacturer's instructions.



### SHOWN IN SEQUENCE:

1. Sheetrock, Paneling, Plywood or Sheathing
2. Water Resistive Barrier (2 Layers)
3. Metal Lath
4. Mortar Scratch Coat
5. Daltile Manufactured Stone or Thin Brick and Grout

### MORTAR MIXES

**MASONRY CEMENT:** Mix 1 part masonry cement (Type N or Type S) with 2 1/4 parts masonry sand and potable water.

**CEMENT/LIME:** Mix 1 part portland cement, 1 part lime, and 4.5 parts sand.

**PREMIXED MORTAR:** Check with the manufacturer for determine if their product is suitable for installation of manufactured stone (building requirement of 50 psi shear bond strength).

**MASONRY SEALER:** Use a breathable type, non-film forming sealer. Dry stack applications (mortarless joint) should be sealed.

# HOW TO PREPARE YOUR WALL

Follow all local building codes for exterior application. Wall penetrations and transitions between sidings must be properly flashed to shed water. See detailed drawings for transitions from other sidings, including flashing, casing bead, weep screed, and sealants.

## PREPARING YOUR WALL - OVER MASONRY

### OVER CONCRETE, MASONRY, STUCCO, OR BRICK THAT IS CLEAN AND UNTREATED:

Check new concrete surfaces for form oil. If form oil is present, use muriatic acid to etch the surface then rinse thoroughly and score the surface with a wire brush.

For best results always use a bonding agent when installing Daltile Manufactured Stone directly over clean and untreated concrete, masonry stucco, brick or block.

### CONCRETE, MASONRY, STUCCO, OR BRICK THAT IS DIRTY, SEALED OR PAINTED.

Return surface to original condition by sandblasting or waterblasting (wash area to remove sandblast dust) or attach lath with concrete nails. Use a bonding agent on the wall and in the mortar mix.

**UNACCEPTABLE BONDING SURFACES:** Painted, sealed, dirty concrete, brick, or masonry, unsound/deteriorating masonry, EIFS, Fiber cement board.



**DO NOT USE:** In direct contact with chemicals (de-icing minerals, salt, chlorine), submerged in water, or below grade.

## PREPARING YOUR WALL - OVER FRAMING

If installing Daltile Manufactured Stone over framing (wood or metal) with sheathing (plywood, OSB, rigid insulation, gypsum wall board, concrete board, fiber board):

**STEP 1:** Ensure all penetrations are properly flashed in a watershed fashion.

**STEP 2:** Install two layers of Water Resistant Barrier, overlapping the horizontal joints 2", shingle fashion. Vertical seams should overlap 6".

**STEP 3:** Following local building codes, install mesh or lath. Lath should be installed horizontally, overlapping sheets 1" at the edges. Fasteners should be spaced 6" on center vertically and 16" on center horizontally and driven into the studs at least 1". **Wrap lath around corners, at least 16" or to the next framing member.**

**STEP 4:** Trowel a 3/8" nominal thick coat of mortar to the metal lath to create a mortar scratch coat. Press hard enough to firmly embed the lath with mortar.

**STEP 5:** Score or scratch the surface horizontally when mortar is "thumbprint dry".

**DO NOT USE:** In direct contact with chemicals (de-icing minerals, salt, chlorine), submerged in water, or below grade.



Install Water Resistant Barriers  
(exterior applications)



Install corrosion resistant metal lath



Mix mortar



Apply mortar setting bed



Rake mortar setting bed

# APPLYING MANUFACTURED STONE



Apply mortar to the entire back of stone



Install corner stones first



Install flat stones



Trim stones to fit  
Option A - circular saw



Trim stones to fit  
Option B - hammer



Trim stones to fit  
Option C - Nippers



Fill grout bag



Grout joints



Strike joints



Strike Joints



Brush off excess mortar with a dry brush



Brush off excess mortar with a dry brush

## MANUFACTURED STONE APPLICATION

### Setting stones in mortar

**STEP 1:** Completely cover the back of the stone with mortar, at least inch thick, and press the stone firmly into the scratch coat to ensure a good bond. Press hard enough to squeeze out a little mortar around the edges of the stone. Make sure you have complete coverage between the mortar bed and the surface of the stone.

**STEP 2:** Corner pieces should be installed first. Alternate the long and short legs of the corner pieces in opposite directions.

**STEP 3:** After the corner pieces are installed, apply flat pieces starting at the outside working toward the center of the wall.

### STEP 4: CUTTING AND TRIMMING

Use the edge of a trowel, nippers, or a circular saw with an abrasive blade to cut and shape stones. If necessary, broken stones can be trimmed and shaped to fill in any gaps. For the most attractive finished appearance, coat with mortar any cut or broken edges. Also, try to place cut edges up when they are above eye level and down when they are below eye level.

### STEP 5: GROUTING JOINTS.

In applications where a mortar joint is used, fill in the joints with a mortar bag, taking care to avoid getting mortar on the stones surface. Any accidental smears can be removed with a whisk broom after the mortar is crumbly. Never use a wet brush, wire brush, acid or acid-based product to clean the stone.

### STEP 6: FINISHING JOINTS.

Proper jointing gives your project an appealing and professional finish. Before finishing, allow mortar joints to become firm (approximately 30-60 minutes), then point them up with a jointing tool. Weather conditions and the type of surface both influence drying time.

**STEP 7: BRUSH JOINTS.** Remove excess mortar then firmly compress and seal the edges around the stones. Brush stones and joints with a dry whisk broom to finish and clean the project.

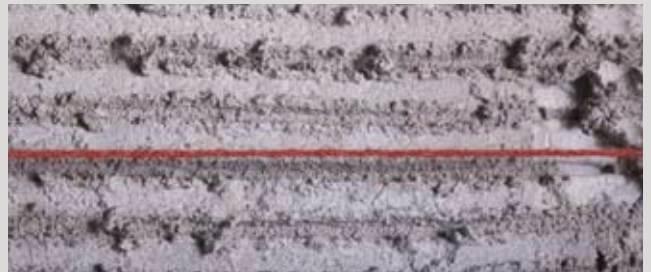
### MORTARLESS (DRY STACK) APPLICATION

In dry stack application where no mortar joints are used, add a bonding agent to the mortar mix and seal the finished project with a breathable (non-film-forming) sealer. Install from the bottom up and keep joints as level as possible.

### CLEANING AND SEALING

Clean Daltile Manufactured Stone with a soft bristle brush and water. If stained with mineral deposits or efflorescence, stone may be cleaned with a diluted household vinegar solution (7 parts water, 1 part vinegar). Rinse thoroughly with clean water after cleaning.

Do not use wire brushes or acid to clean Daltile Manufactured Stone. Seal Daltile Manufactured Stone in dry-stacked applications or in harsh environments with a breathable, non-film forming masonry sealer.



Joint lines should be level and plumb. Snapping horizontal chalk lines every 8" will help keep the installation level.

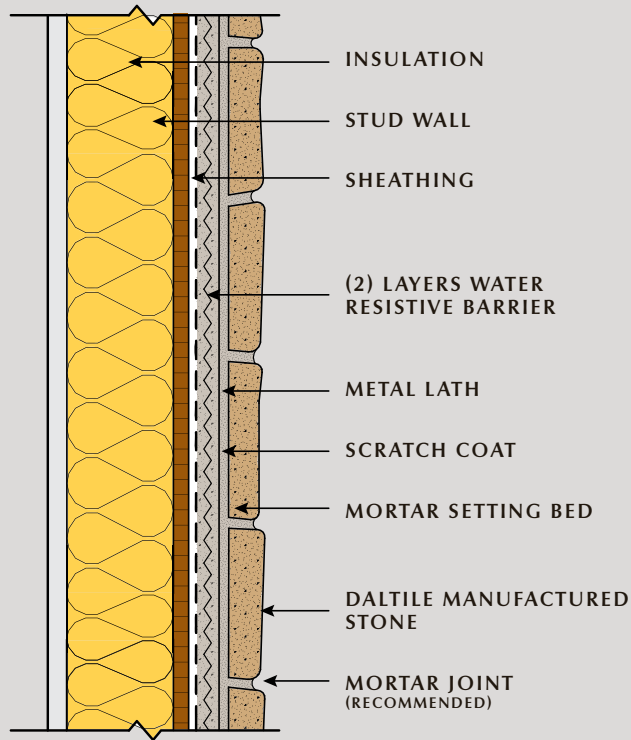


Moisten the scratch coat and the back of the Stone, especially in hot or windy climates

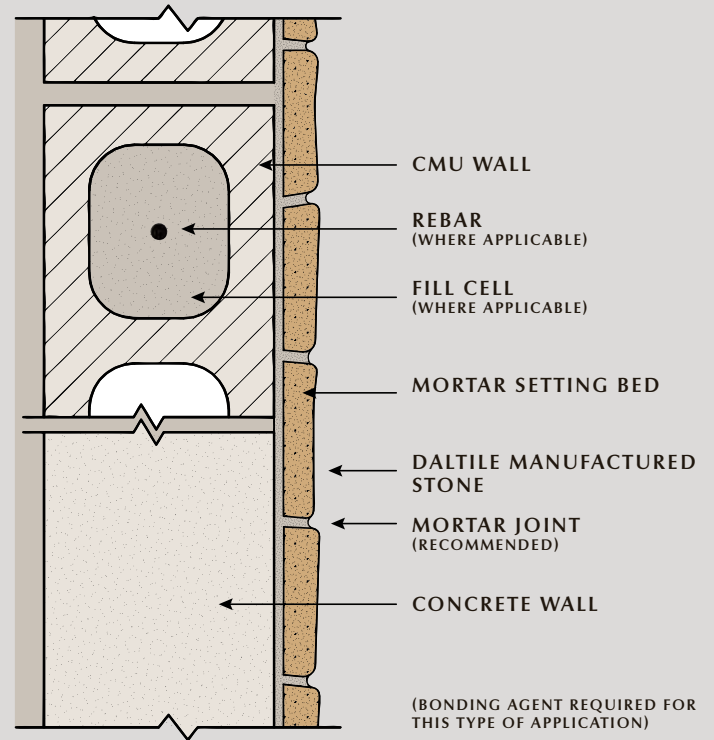


Mortar Consistency is best for application when it starts to stick to your trowel.

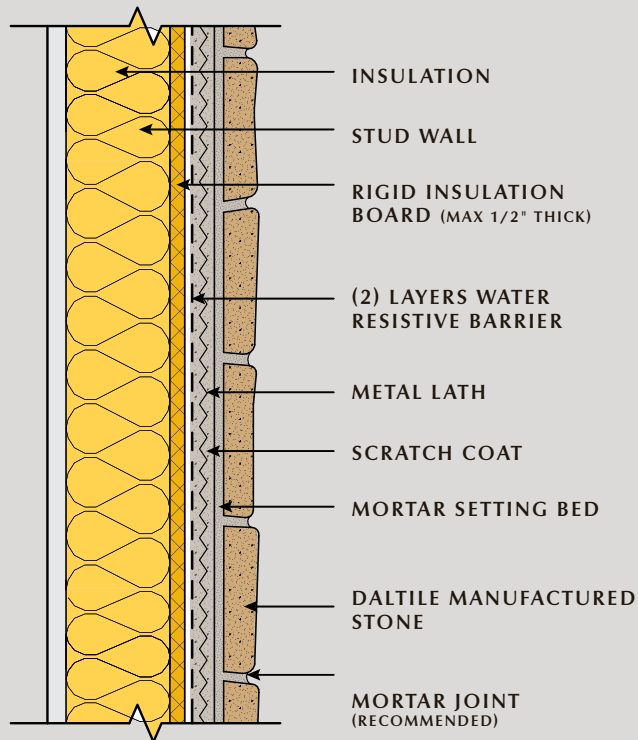
## OVER SHEATHING



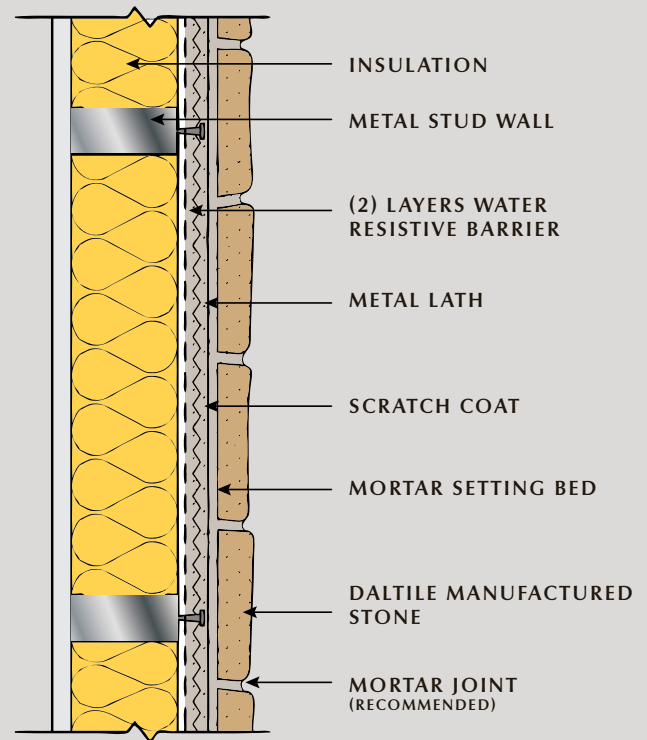
## OVER CMU OR CONCRETE



## OVER RIGID INSULATION

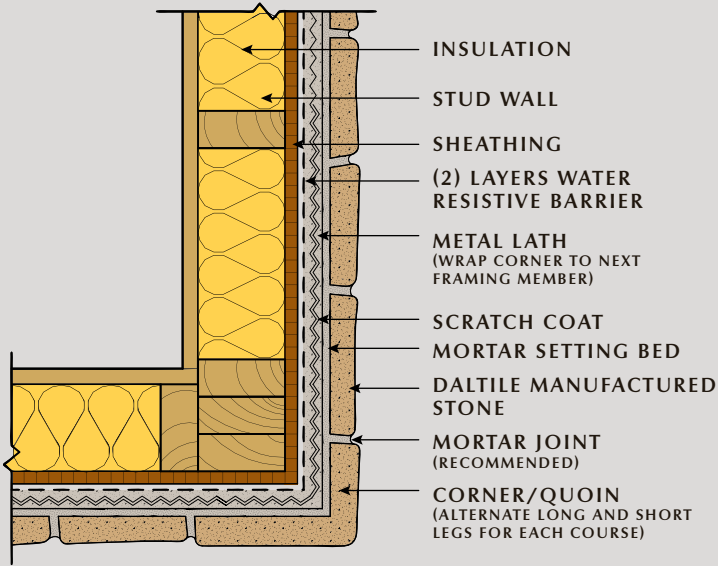


## OVER OPEN STUD FRAMING

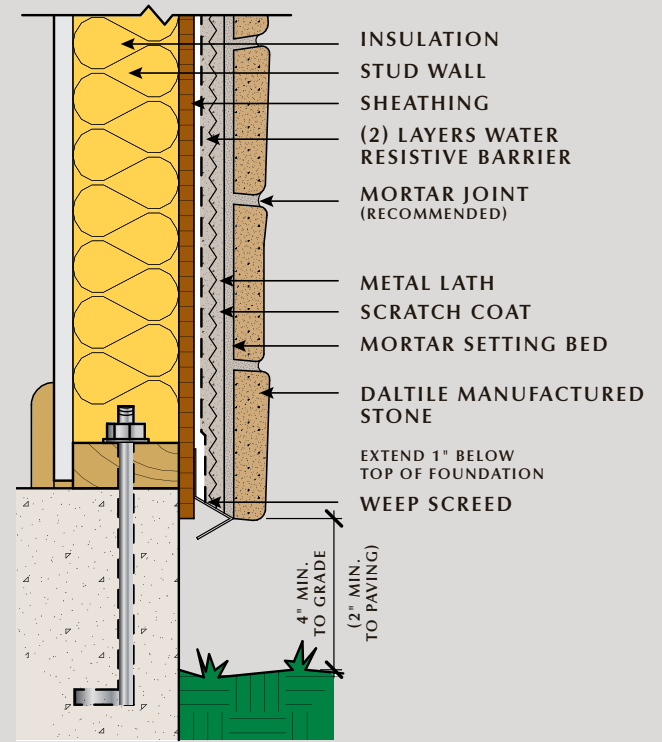




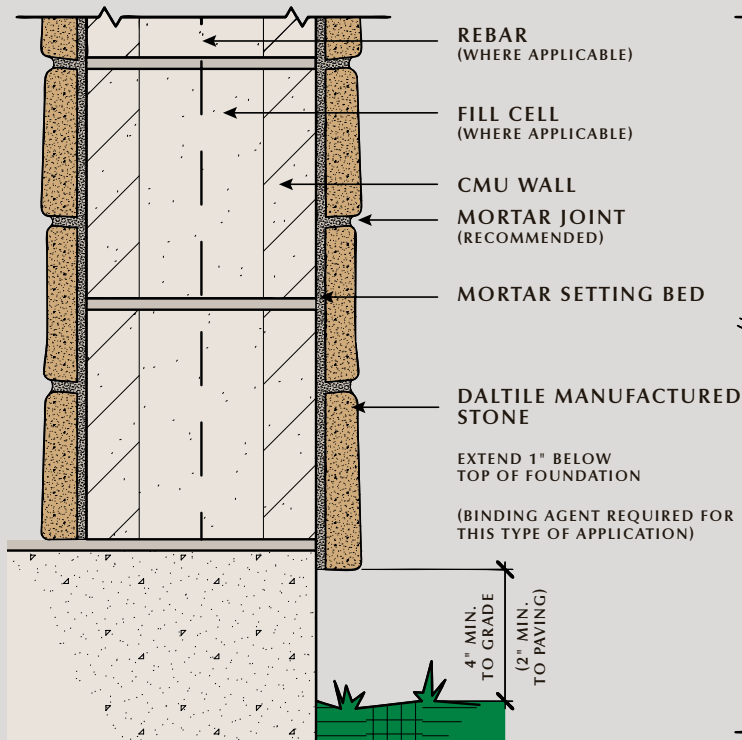
CORNERS / QUOINS (TOP VIEW)



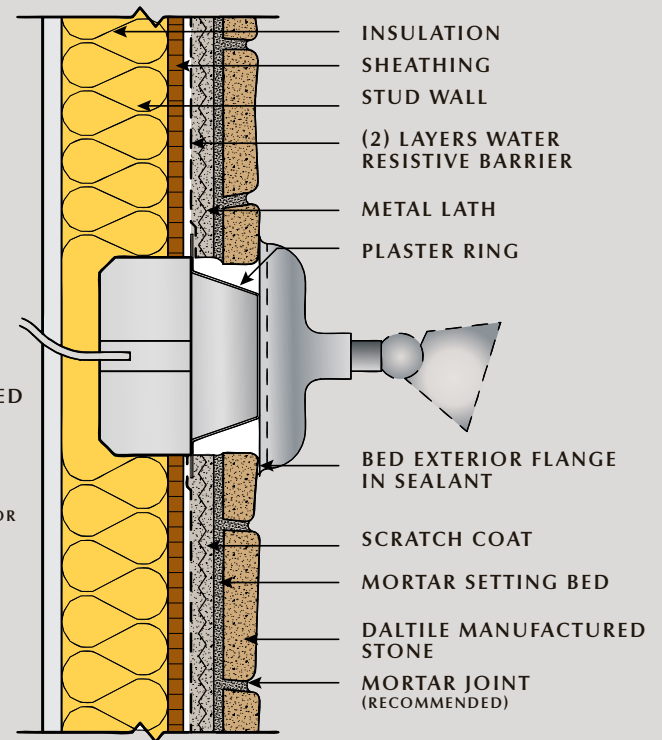
FOUNDATION WOOD



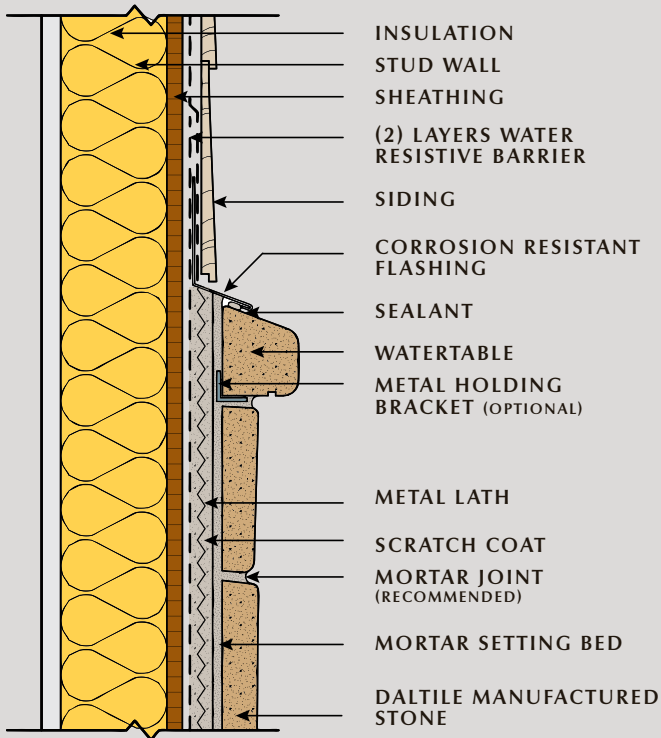
FOUNDATION CMU WALL



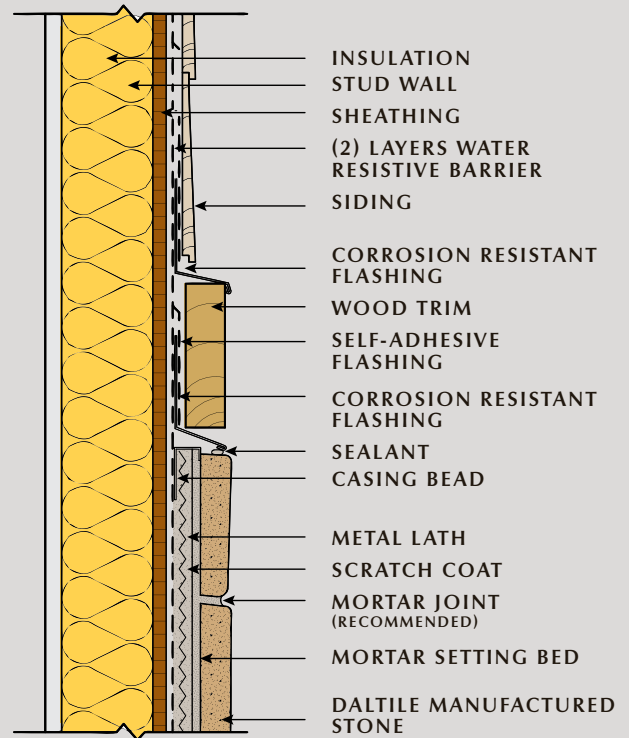
FIXTURE PENETRATION



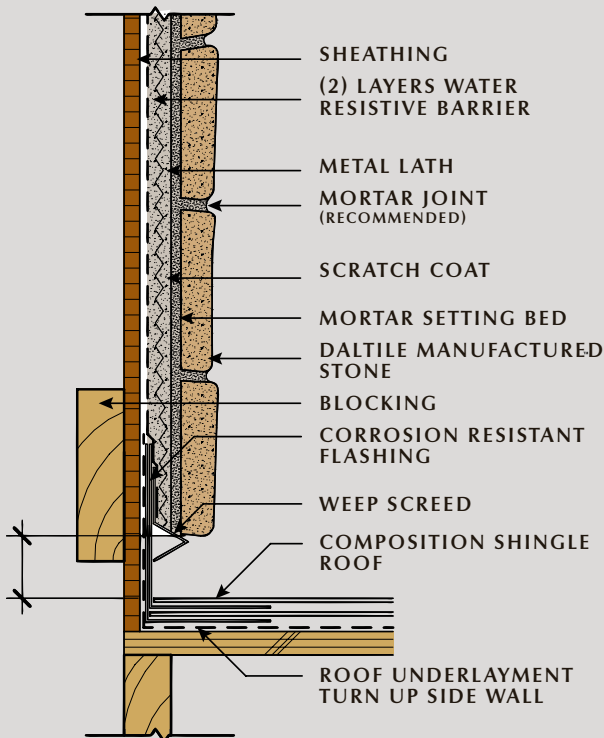
TRANSITION - WATERTABLE SIDING



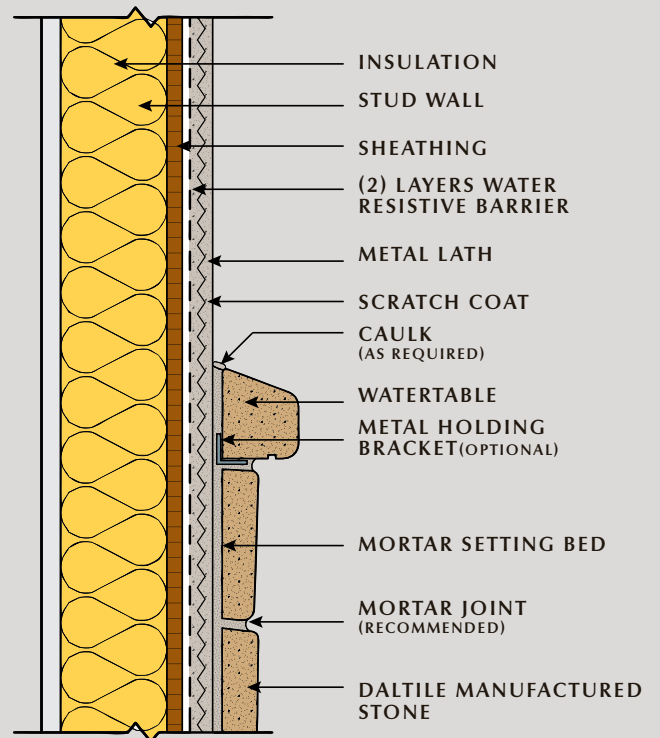
TRANSITION - WOOD TRIM



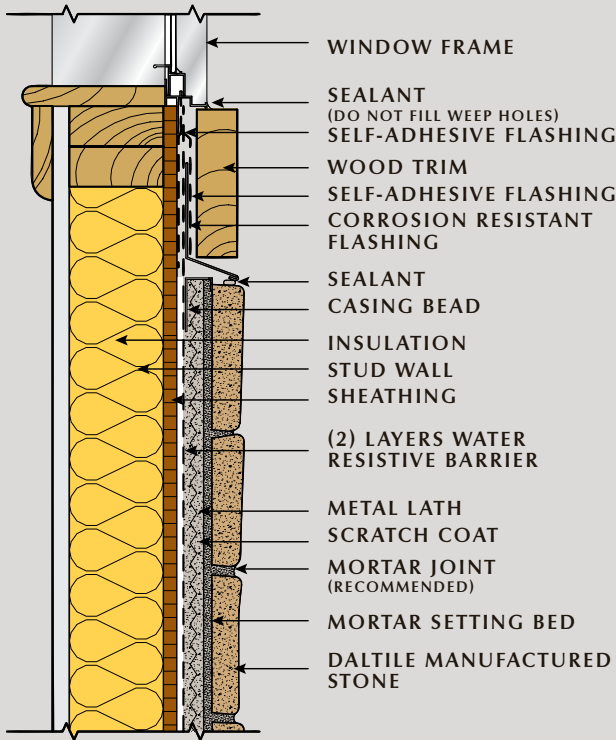
TRANSITION - WALL TO ROOF



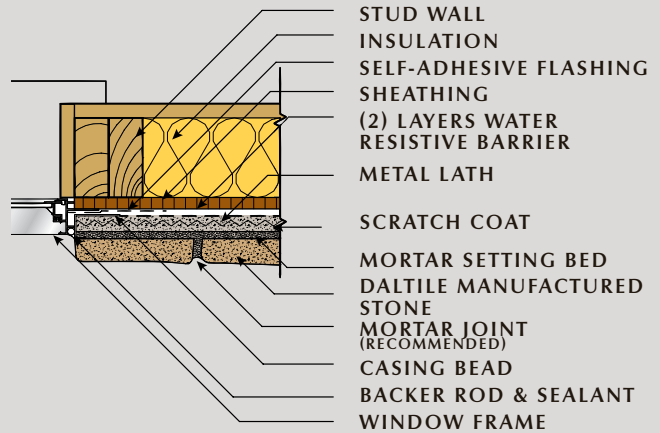
TRANSITION - WATERTABLE STUCCO



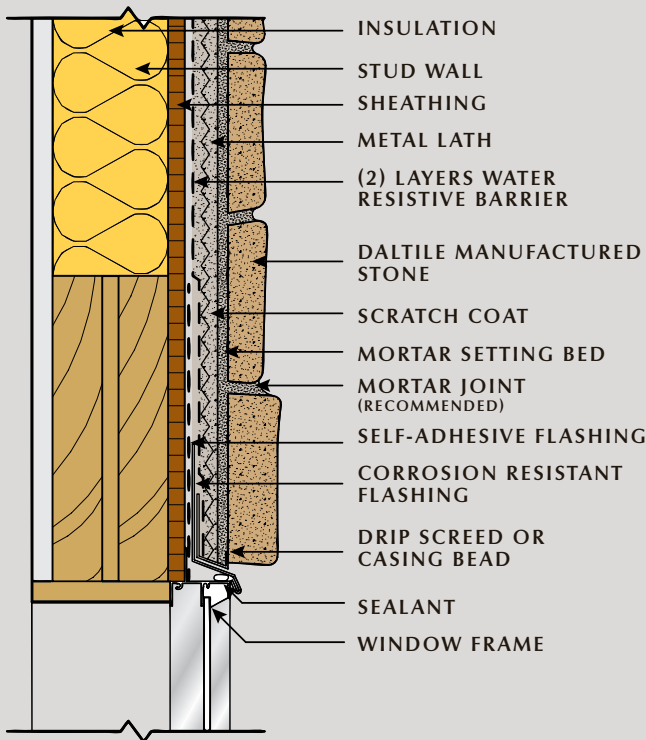
WINDOW SILL - WOOD TRIM



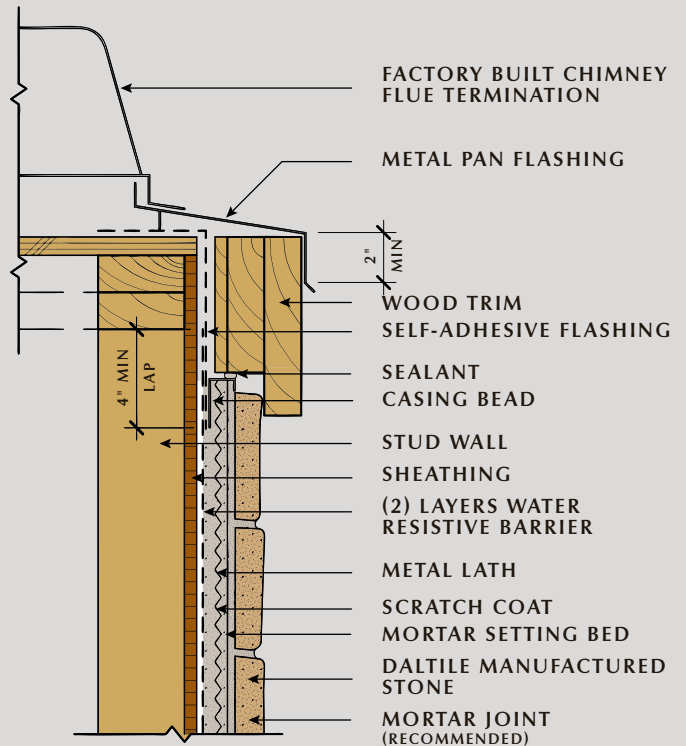
WINDOW JAMB



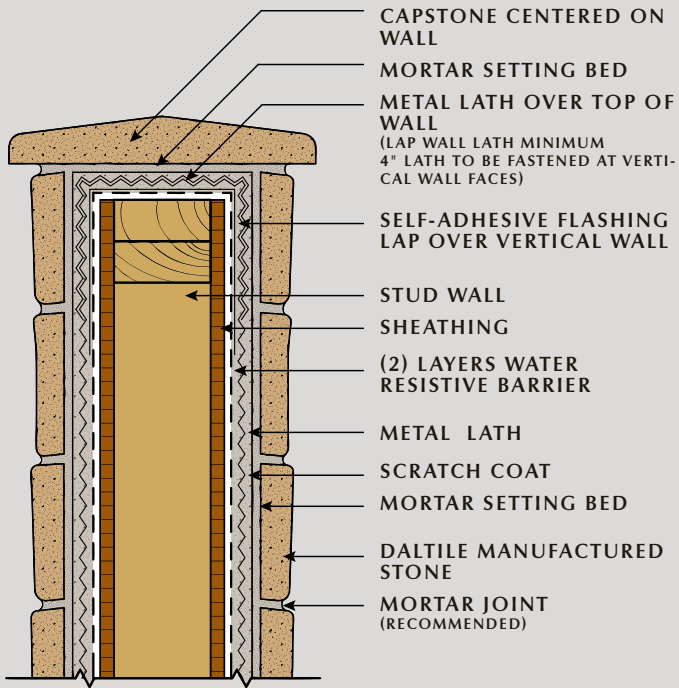
WINDOW HEAD



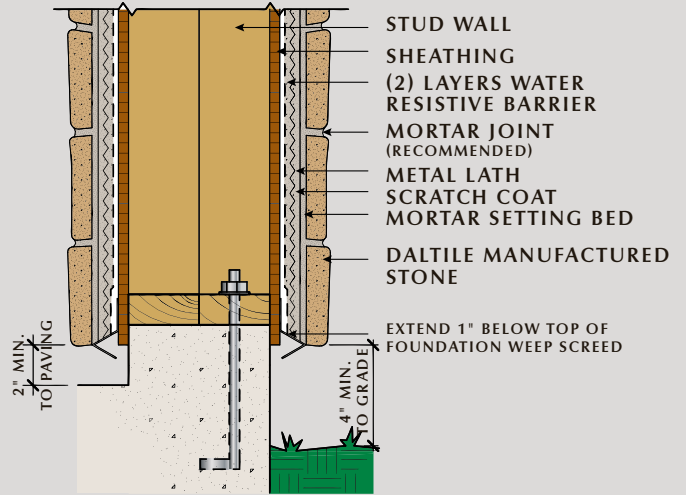
CHIMNEY CAP



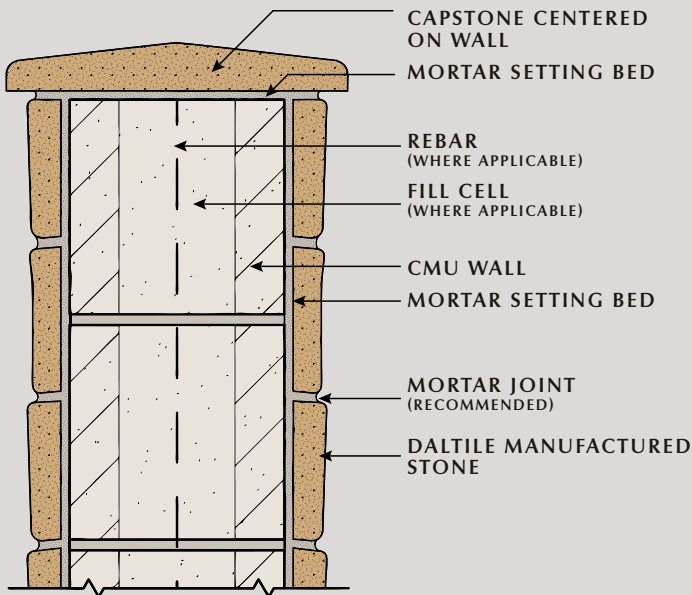
## STUD WALL - CAP



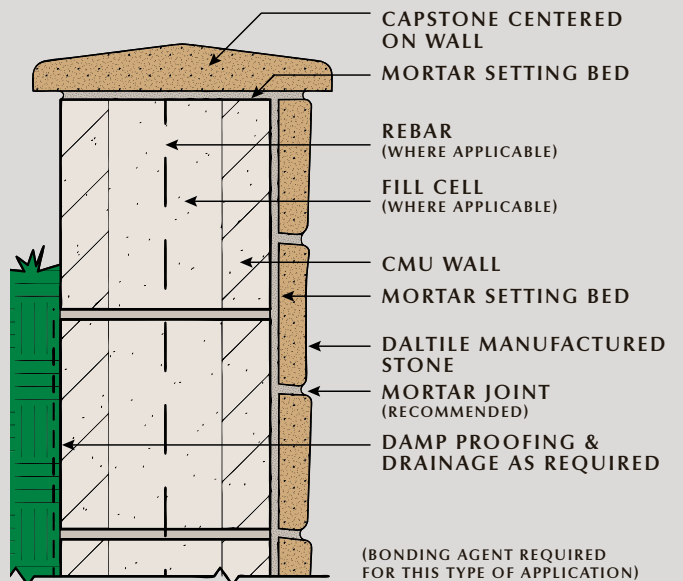
## WOOD COLUMN BASE



## CMU WALL - CAP



## RETAINING WALL - CAP



## TECHNICAL DATA

Test Name	Density of Structural Lightweight Concrete	Freeze Thaw/ Efflorescence	Compressive Strength	Flexure Strength	Tensile Strength	Water Absorption	Shear Bond Strength
Test Number	ASTM C-567	ASTM C-67	ASTM C-192, C-39	ASTM C-348	ASTM C-190	UBC Std. 15-5 & 32-12	ASTM C-482
Test Result	15 psf maximum	Less than 3% mass loss in 50 cycles/ None visible	Minimum of 1800 psi in 28 days	No more than 10% deviation	No more than 10% deviation	22% average maximum	Minimum 50 psi

## WARRANTY & LEGAL INFORMATION

### 75 YEAR LIMITED WARRANTY

Daltile Manufactured Stone carries a 75 year limited warranty when used on structures that conform to all local building codes. Material must be installed according to manufacturer's installation instructions. Warranty is limited to replacement of defective materials only and does not cover labor to remove or replace stone. Warranty does not cover damage resulting from building settlement, wall movement, contact with chemicals or paint, discoloration due to airborne contaminants or stains caused by material applied to or allowed to come in contact with stone. Warranty is nontransferable and is limited to original purchaser.

**WARNING: CONCRETE VENEER CONTAINS CRYSTALLINE SILICA AND TRACES OF OTHER HAZARDOUS SUBSTANCES THAT ARE RELEASED AS DUST WHEN DRY-CUTTING, DRILLING OR SHAPING THIS PRODUCT. PROLONGED EXPOSURE TO THESE MATERIALS AND FAILURE TO USE PROPER SAFETY DEVICES AND SAFE WORK PRACTICES, MAY RESULT IN A LUNG INJURY, LUNG CANCER, SILICOSIS AND/OR DEATH. IT IS RECOMMENDED THAT WHEN DRY-CUTTING, DRILLING OR SHAPING THE PRODUCT, YOU FOLLOW THE GUIDELINES ESTABLISHED BY OSHA WHEN WORKING WITH SILICA CONTAINING DUST. THESE CAN BE OBTAINED ONLINE AT [www.osha.gov/SLTC/silicacrystalline/index.html](http://www.osha.gov/SLTC/silicacrystalline/index.html) OR BY CALLING 1-800-321-OSHA (6742)**

When installing stone, it has been determined that broken pieces can and should be used. In mortarless joint applications, where no mortar joints are used, use a bonding agent and seal with a breathable (non-film-forming) sealer. Cover the entire back of the stone with mortar and press stone firmly into the mortar bed to ensure a good bond. Press hard enough to squeeze out a small amount of mortar around all the edges of the stone. Make sure you have complete coverage between the mortar bed and the surface of the stone. Raw materials used in production may vary slightly. We recommend that you blend stone from different boxes throughout your installation area. Variations are inherent in all manufactured stone and concrete products. Questions regarding suitability and / or acceptability must be resolved before installation. Use constitutes acceptance.

