

### Exterior Installation of PermaBase®

**General:** All framing should comply with local building code requirements and be designed to provide support with a maximum allowable deflection of L/360 under all intended live (including wind) and dead loads.

**Note:** Cut or score PermaBase® on rough side of panel.

**Control Joints:** For exterior installations, consult finish manufacturer for spacing requirements. For exterior tile applications, control joints should be spaced a maximum of every 12'. If no recommendation is available, allow a maximum of 16 lineal feet between control joints. A control joint must be installed but not limited to the following locations: where expansion joints occur in the framing or building (discontinue all cross furring members located behind joint); when boards abut dissimilar materials; where framing material changes; at changes of building shape or structural system; at each story separation. Place control joints at corners of window and door openings or follow specifications of architect. Control joint cavity shall not be filled with coating or other materials.

### WALLS AND CEILINGS

**Wall Framing:** Studs should be spaced a maximum of 16" o.c. Edges/ends of PermaBase parallel to framing should be continuously supported. Provide additional blocking when necessary to permit proper PermaBase attachment. Do not install PermaBase directly over protrusions from stud plane such as heavy brackets or fastener heads.

**Ceiling Framing:** The deflection of the complete ceiling assembly due to dead load (including insulation, PermaBase, bonding material and facing material) should not exceed L/360. The dead load applied to the ceiling frame should not exceed 10 psf. Ceiling joist or furring channel should not exceed 16" o.c. (Edges of PermaBase parallel to framing should be continuously supported.) Provide additional blocking when necessary to permit proper PermaBase attachment.

**Water Barrier:** While PermaBase is unaffected by moisture, a water/air resistive barrier (WRB) must be installed to protect the cavity. The type and specific placement or location of the water barrier will vary based on local building codes and/or manufacturers' warranties. Consult the WRB manufacturer's recommendations for specific installation guidelines.

**PermaBase Cement Board:** Apply PermaBase with ends and edges closely butted but not forced together. Stagger end joints in successive courses. Drive fasteners into field of cement board first, working toward ends and edges. Space fasteners maximum 8" o.c. for walls, 6" o.c. for ceilings with perimeter fasteners at least 3/8" and less than 5/8" from ends and edges.

**Joint Reinforcement:** Trowel bonding material to completely fill the tapered recessed board joints and gaps between each panel. On non-tapered joints, apply a 6" wide, approximately 1/16" thick coat of bonding material over entire joint. For all joints, immediately embed 4" alkali-resistant fiberglass mesh tape fully into applied bonding material and allow to cure. Same bonding material should be applied to corners, control joints, trims or other accessories. Feather bonding material over fasteners to fully conceal.



### DECKS

**Subfloor:** Plywood should be securely glued and fastened to floor joists spaced a maximum of 16" o.c. Subfloor should be sloped at a minimum pitch of 1/4" per foot. The floor surface should be true to plane within 1/8" in 10'.

**Underlayment:** Using a 1/4" square-notched trowel, apply a setting bed of latex-portland cement mortar to the subfloor. Immediately laminate UltraBacker® to subfloor, leaving a 1/8" space between boards at all joints and corners. Leave a 1/4" gap along walls. Stagger joints so they do not line up with underlying substrate joints. Fasten UltraBacker every 8" o.c. throughout board field and around all edges while setting bed mortar is still workable. Around perimeter of each board, locate fasteners 2" from the corners and not less than 3/8" from the edges. Fill all joints solid with bonding material. On non-tapered joints such as butt ends, apply a 6" wide, 1/16" thick coat over the entire joint. For all joints, embed alkali-resistant fiberglass mesh tape fully into applied bonding material; ensure that tape is centered over joint. Apply bonding material over fasteners to fully conceal. Remove all excess bonding material and allow it to cure.

**Waterproof Membrane:** Trowel apply waterproof membrane to the entire surface of the cement board, following membrane manufacturer's installation instructions in detail.

## Cement Board Stucco Wall Systems (CBSS)

For use in residential and low-rise commercial applications, CBSS provides a drainage system to help prevent water from penetrating behind cladding in framed construction. It complies with ASTM D226, protecting approved sheathings/structural components and helping to evacuate incidental water.

### BENEFITS INCLUDE

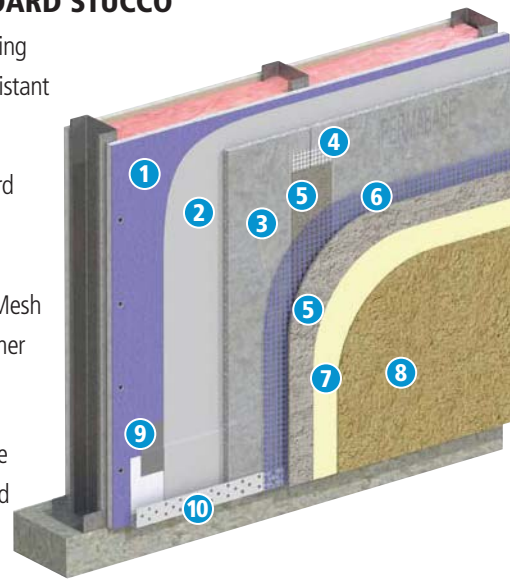
- Appropriate for all climates and resists the growth of mold and mildew
- Extremely durable with increased resistance to impact and inclement weather
- Acrylic polymers provide more resistance to fading, cracking and peeling
- Engineered system that allows a faster installation while providing superior quality control (manufactured product that must comply with ASTM product specifications)
- Speed up your schedule – easier, cleaner installation than traditional stucco
- Provide drainage system to help prevent water from penetrating behind cladding in frae construction
- Choose from a variety of textures and color options
- Provides a 15-year exterior warranty – the industry’s best

### LIMITATIONS

- Follow finish material manufacturer's instructions for proper installation
- Treat joints in PermaBase® with mesh tape and base coat
- Thin veneer construction can reveal planar irregularities in framing
- Minor cracking at joints may become visible in finished exterior surface
- Exterior finishes applied directly to PermaBase®: Reinforcing mesh must be embedded in base coat (consult exterior finish manufacturer for additional installation requirements)
- Conventional Portland cement plaster systems: Self-furring metal lath must be used over PermaBase® and fastened to studs
- Code-approved water/air resistive barrier (WRB) must first be installed to protect the cavity (type and placement will vary per local building codes and/or manufacturer’s specifications, installation guidelines and warranties)

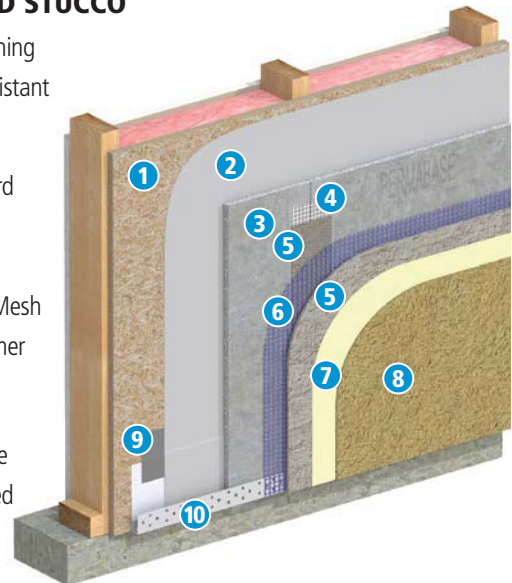
## CEMENT BOARD STUCCO

1. EXP® Sheathing
2. Weather Resistant Barrier
3. PermaBase® Cement Board
4. Mesh Tape
5. Base Coat
6. Reinforcing Mesh
7. Optional Primer Coat
8. Finish Coat
9. Flashing Tape
10. Weep Screed



## WOOD STUD STUCCO

1. Wood Sheathing
2. Weather Resistant Barrier
3. PermaBase® Cement Board
4. Mesh Tape
5. Base Coat
6. Reinforcing Mesh
7. Optional Primer Coat
8. Finish Coat
9. Flashing Tape
10. Weep Screed



## Cement Board Masonry Veneer Wall System (CBMV)

For use in residential and low-rise commercial applications, CBMV offers a complete, engineered solution for installation of adhered veneers. It provides the ability to incorporate an effective water-management system for a variety of building exteriors with manufactured or natural stone, tile and thin brick veneers.

### BENEFITS INCLUDE

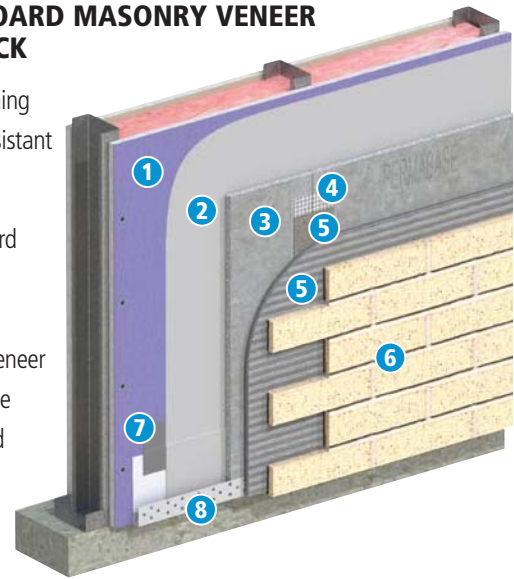
- Engineered system that allows a faster installation while providing superior quality control (manufactured product that must comply with ASTM product specifications)
- Increased performance by utilizing modified adhesive mortars (designed for hanging materials) rather than type S&N mortars (developed for stacking materials)
- Extremely durable with increased resistance to impact and inclement weather
- Approved for use in ASTM 1780, and cement board is cited as an approved substrate for this system by the Masonry Veneer Manufacturers Association (MVMA): Installation Guide and Detailing Options for Compliance with ASTM C1780
- Easily allows for the inclusion of continuous installation into the assembly
- Appropriate for all climates, and resists the growth of mold and mildew
- Speed up your schedule – faster, easier and cleaner than traditional metal lath/scratch-coat method
- IBC/IRC compliant; meets ASTM C1325
- PermaBase® is approved as a substrate for direct applied finishes, tile, stone and thin brick in exterior applications, as outlined in UL Evaluation Report ER-22158
- PermaBase® is suitable for use in combustible and noncombustible construction under the IBC and IRC, as outlined in UL Evaluation Report ER-22158

### LIMITATIONS

- Sheathing selection and installation varies according to type of wall construction
- Code-approved water/air resistive barrier (WRB) must be installed to protect the cavity (type and placement will vary per local building codes and/or manufacturer's specifications, installation guidelines and warranties)

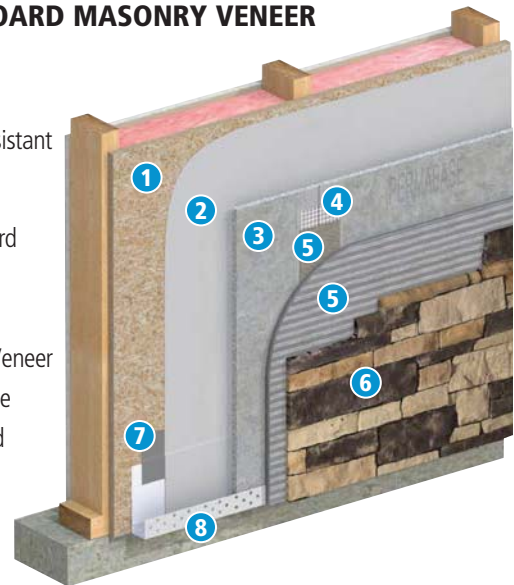
### CEMENT BOARD MASONRY VENEER – THIN BRICK

1. EXP® Sheathing
2. Weather Resistant Barrier
3. PermaBase® Cement Board
4. Mesh Tape
5. Mortar
6. Thin Brick Veneer
7. Flashing Tape
8. Weep Screenshot



### CEMENT BOARD MASONRY VENEER – STONE

1. Sheathing
2. Weather Resistant Barrier
3. PermaBase® Cement Board
4. Mesh Tape
5. Mortar
6. Thin Stone Veneer
7. Flashing Tape
8. Weep Screenshot



This section of the PermaBase Construction Guide provides information on how to utilize PermaBase within both a CBMV System and a Continuous Insulation System. While some typical examples are shown for reference purposes, the specifications and details on how to design and construct individual systems should be obtained from the adhering material or veneer manufacturer of the materials that are being used to complete the system. For more information, go to [permabase.com/exterior](http://permabase.com/exterior).