# Water-Resistant Barrier for Portland Cement Plaster (Stucco) on Framed Walls

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STUCCO MANUFACTURERS ASSOCIATION

**OVERVIEW:** Portland Cement Plaster (stucco) on framed walls has code requirements for a secondary moisture barrier to prevent incidental moisture from entering the wall cavity, allow for drainage, and prevent condensation. Felts, asphalt-saturated kraft paper, house wraps, and fluid-applied membranes may be used.

**HISTORY:** The codes initially required only a single layer of felt or asphaltic paper. As wood sheathing became popular, stucco cracking increased. Adding a second layer of Grade D paper created a slight "buffer" zone as the paper wrinkled when wet from the plaster mix; this second layer reduces cracking. In 1982, the Uniform Building Code adopted section 4706(d) to include two-layers Grade D asphaltic paper over wood-based sheathing. The code adoption was about limiting the cracking of cement plaster on the wood-based sheathing and not about drainage provisions. Wood is hygroscopic and will swell slightly from the plaster mix water and can crack not fully cured cement plaster. This is why SMA recommends a gap between the edges and ends of wood sheathing panels under cement plaster. This also explains why the code only required two layers over sheathings that are wood-based, SMA recommends two layers over <u>all</u> types of sheathings.

**TODAY:** The International Building Code (IBC) has introduced "Climate Zones" when selecting the WRB protection for stucco over wood-based sheathing. The intent today has morphed to drainage provisions. The 2021 code (see inset below) has several requirements and exceptions for cement stucco. The SMA has widespread experience with various plaster systems related to water intrusion issues in all Climate Zones. This paper may assist designers, contractors, and building officials concerning WRB, rigid foams, and drain mats with code referenced Climate Zones and cement plaster over sheathings (see page 2). *A WRB is defined by SMA as equal or exceeding ASTM E2556, Type II (60 minute Grade D)*

## Chapter 25 International Building Code (IRC R703.7.3 has similar language)

**2510.6 Water-resistive barriers.** Water-resistive barriers shall be installed as required in Section 1403.2 and, where applied over wood-based sheathing, shall comply with Section 2510.6.1 or Section 2510.6.2.

**2510.6.1 Dry climates.** One of the following shall apply for dry (B) climate zones:

1. The water-resistive barrier shall be two layers of 10-minute Grade D paper or have a water resistance equal to or greater than two layers of water-resistive barrier complying with ASTM E2556, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing, installed in accordance with Section 1404.4 and intended to drain to the water-resistive barrier, is directed between the layers.
2. The water-resistive barrier shall be 60-minute Grade D paper or have a water resistance equal to or greater than one layer of water-resistive barrier complying with ASTM E2556, Type II. The water-resistive barrier shall be separated from the stucco by a layer of foam plastic insulating sheathing or other non-water absorbing layer.

**2510.6.2 Moist or marine climates.** In moist (A) or marine (C) climate zones, water-resistive barrier shall comply with of one of the following:

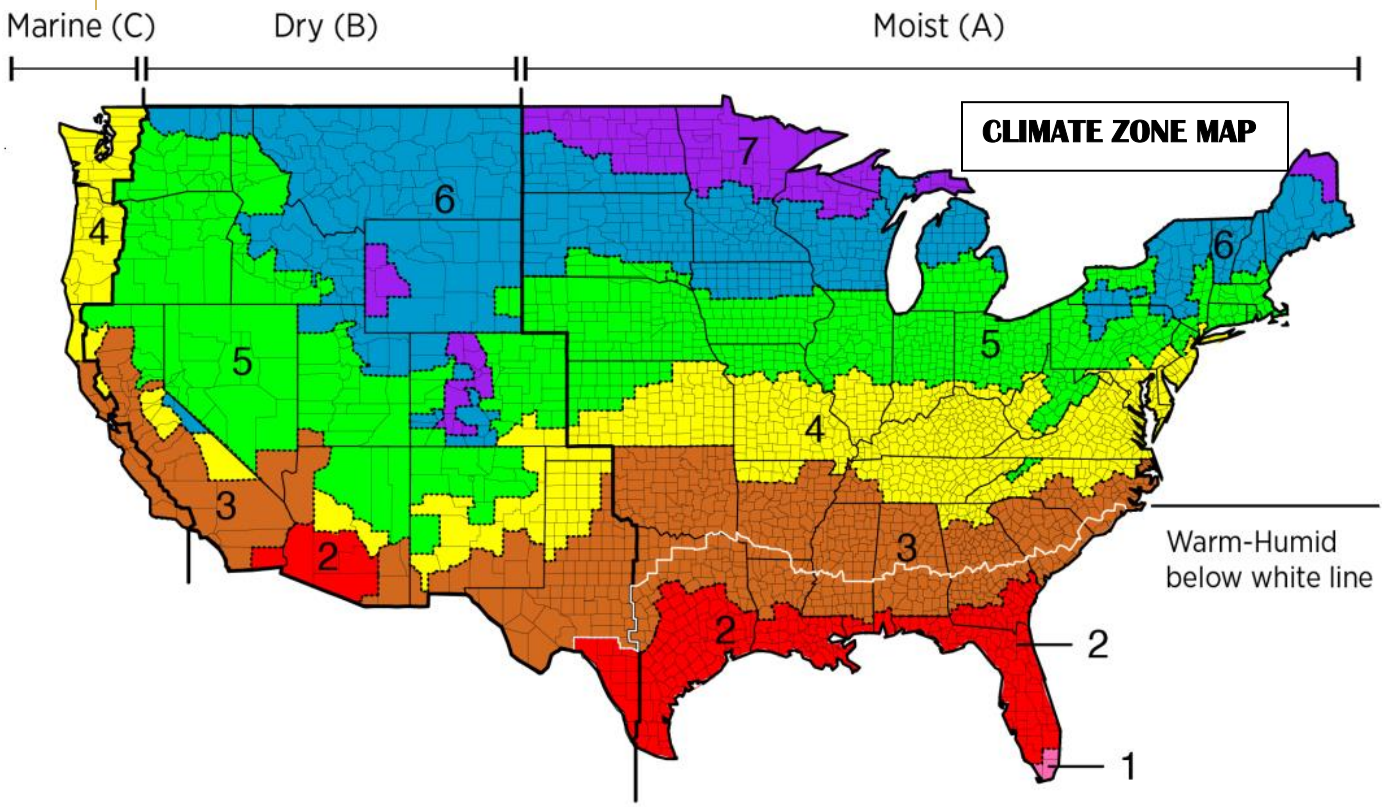
1. In addition to complying with Item 1 or 2 of Section 2510.6.1, a minimum 3/16 inch (4.8 mm) space shall be added to the exterior side of the water-resistive barrier.
2. In addition to complying with Item 2 of Section 2510.6.1, a space with a minimum drainage efficiency of 90% as measured in accordance with ASTM E2273 or Annex A2 of ASTM E2925 is added to the exterior side of the water-resistive barrier.

# SMA Positions (for WRB over wood-based sheathings)

**Two Layers of WRB:** *Compliant to Climate Zone B and for Zones A & C with approvals*
The SMA stands with building departments in Climate Zones A & C that continue to accept two layers of asphaltic saturated kraft paper or a blended two-layer system (the top layer should not bond to the cement). Windows/Doors shall meet sections 1404.13,1404.4 and weep screeds shall meet section 2512.1. Each layer of WRB must be separate but maybe a double-ply sheathing asphaltic paper with a minimum 60-minute rating. Horizontal laps shall exceed two inches, and vertical laps shall exceed 12 inches. All sheet good products need to be installed and integrated with flashings in a "Shingle-Fashion" manner. The base layer WRB may be a code-compliant fluid product applied to or on the sheathing.

**One Layer Under Continuous Insulation (CI):** *Climate Zone B with provisions to meet Zones A & C*
A layer of foam plastic is a WRB when applied over a water-resistance barrier equal to or greater than 60 minutes. Climate Zones A & C require foam to be tongue and groove with vertical drainage channels (minimum 1/8 inch deep) spaced no further than 12 inches apart or with a 3/16 inch space or over approved drainage mat. One-Coat CI Stucco systems installed per SMA manufacturer recommendations meet all Climate Zones.

**One layer With a Drainage Mat (rainscreen):** *All Climate Zones, no restrictions*
All Zones may use a single layer WRB with a 60 minute or greater rating that include a 3/16 air space or an approved drainage mat. The mat/space must be lined to prevent cement plaster from filling the void.




*The SMA is a national association formed in 1957, dedicated to the promotion, education, and training of the lath and plaster industry. Manufacturer's recommendations will supersede SMA recommendations. An SMA Certified Contractor has been tested, references checked, and able to help select appropriate WRB(s) for their Climate Zone. The* ***Warm-Humid Zone and Hawaii are specific regions that benefit most from using a drain mat (rainscreen) type assembly.*** *The local Building Department has final approval for alternates/variations regarding alternate designs, materials, and methods.*

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