

Part Two. THE BREATHABLE BUILDING ENVELOPE

A healthy building envelope, consisting of slab, foundation, walls and roof, is the heart of a healthy home. Therefore we devote Part [Two](#) to a detailed exploration of this topic.

To understand how a building envelope works, especially an unconventional one such as the so-called “breathing wall” system that building biologists recommend, we begin by providing the necessary scientific background (chapter [6](#)).

Having grasped these concepts, the reader is well equipped to understand the problems associated with water intrusion and how it affects conventional construction. You will learn the ways in which breathable and thermally massive wall systems handle these problems in a completely different way, greatly reducing the ability of mold to grow in walls and foundations (chapter [7](#)).

Next we describe our preferred wall materials that satisfy our design criteria. Practical technologies readily adaptable by the mainstream construction trade in North America are our focus (chapter [8](#)). Cements are integral to several of these systems, so this discussion also addresses the search for healthier alternatives. Finally, we present breathable, thin-wall alternatives to conventional wood-based sheathing, using magnesia, a raw material that is readily available throughout the world. Cavity insulation materials that allow rapid drying of moisture without creating mold are installed into these thin walls.

Now that we have learned how to select our breathable materials and what our choices are, we are ready to begin building! The hands-on aspects of constructing the complete wall system, including all finishing treatments, are explained in chapters [9](#) and [10](#) for thermally massive and alternative thin-wall materials, respectively. The remainder of the envelope, consisting of slab, foundation, roof and attic, is presented in chapters [11](#) to [13](#). (The detailed construction protocols are saved for Part [Two](#).)

Having finally surrounded ourselves with a breathable envelope, we conclude Part [Two](#) by putting forth some additional design considerations necessary for the envelope to function well: moisture control; ventilation; passive solar; windows and doors; heating and cooling (chapter [14](#)). We even discuss how Building Biology® interrelates with such ancient building traditions as China’s Feng Shui and India’s Sthapatya Veda, also known as Vastu.