



A BUILDER'S GUIDE

Green from the Ground Up

**Sustainable, Healthy,
and Energy-Efficient
Home Construction**

David Johnston & Scott Gibson



highly insulated envelope that also helps cut noise inside. The house performs extraordinarily well, and you don't have to worry about moisture and mold accumulating inside wall cavities because they're completely sealed.

Panels must be kept dry

There are several cautions when building with SIPs. First, and most important, the oriented strand board on the faces of the panels must be protected from water. The two simply don't make good bedfellows. The OSB gives the panels structural strength and if it gets wet and stays wet, it loses its integrity. Careful flashing is key.

The second issue is running electrical cable. Panels are made with channels in the foam to accommodate wiring—horizontally 18 in. off the floor for outlets and vertically

SIPs can be assembled rapidly by well-trained crews using a crane. They make for fast dry-ins and comfortable houses. Even roofs and floors can be made from the panels.

for wires leading to switches. When ordering panels it is imperative to provide an electrical plan so the manufacturer knows where to run these chases. Unfortunately, not all electricians are familiar with SIPs and they may make the mistake of hacking their way through the OSB to make room for wires without knowing the chases are there. Plumbing should never be run in an exterior wall so typically there are no chases provided for that purpose.

There also is a concern that insects may burrow into the foam. According to the Structural Insulated Panel Association, termites



cover and protect the primary weatherproofing barrier on the roof—the building paper or membrane covering the sheathing.

That's not to say there aren't important considerations to take into account when choosing siding. Modern manufacturing techniques have blurred the distinctions between natural and man-made products—fiber cement siding, for example, can look almost exactly like wood clapboarding, and some types of vinyl look so much like wood shingles, even from a few feet away, that you have to reach out and touch them to know. This has made it easier to choose siding that appeals to our aesthetic traditions even as we look for durability and performance. Although there are tradeoffs with some siding choices, having more options is a good thing in an age when the mostly wood products we've grown accustomed to are getting harder to find and more expensive.

Drainage Planes

All cladding leaks. Eventually it will fail, and moisture will find an avenue inside to the

sheathing and, eventually, to the structural elements below. The secret to longevity is giving moisture a way of draining down and away from the building. In grandpa's day, buildings were wrapped with asphalt-impregnated felt paper, just like the roof. As production building became the norm and houses were built as rapidly as possible, for as little money as possible, shortcuts were taken. Too often in recent years, the housewrap or drainage plane has been eliminated and siding installed directly over building sheathing of OSB or plywood. These houses start to fail after just a few years. Problems have prompted the insurance industry to cease paying for mold and moisture damage to improperly constructed homes. Two major insurance companies already have stopped underwriting homes in California and Texas due to the proliferation of mold problems, or they are excluding mold claims on existing policies.

A drainage plane is an intentional design element to ensure that any moisture that gets behind the siding has a way to evaporate or drain down the wall and away from the build-



Housewrap, manufactured under several trade names, is designed to let water vapor through while preventing the passage of bulk moisture. It should be layered correctly (top course over lower course) so it sheds water.

Green from the Ground Up

“A refreshing and comprehensive step-by-step course in green building, packed with both solid building science and commonsense solutions.”

—Helen English, executive director of the Sustainable Buildings Industry Council

“*Green from the Ground Up* overflows with details and practical content that is hard to find anywhere else...an essential resource for any building professional that will be a valuable reference tool for years to come.”

—Brian Gitt, CEO of Build It Green

Green construction is *the* building trend of the decade. In direct response to the growing demand for sustainable, healthy, and energy-efficient homes, David Johnston and Scott Gibson present the most forward-thinking theories and the best proven methods of new and remodeled green construction. They begin with down-to-earth explanations of green building basics and move on to site planning, materials selection, energy efficiency, and indoor air quality—detailing along the way every step in design and construction, from framing to finishes.

A must-have reference for contractors who want to remain competitive, *Green from the Ground Up* is also a remarkable resource for homeowners who require the clearest and most thorough green building information available.

David Johnston is a leader in the green building movement, transforming the way we think about the American home. His approach to green building has been embraced by building professionals, municipalities, homeowners, and sustainability advocates nationwide. He is the founder of www.whatsworking.com and www.greenbuilding.com.

Scott Gibson is a freelance writer and contributing editor to *Fine Homebuilding* magazine.

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