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Building Reputations Together™

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Adding Strength and Durability to Solar Roofing Systems*

At \$40-\$50 per square foot, solar-powered roofs demand the extra durability a proper cover board can provide.

In early October of 2008, Congress approved and President Bush signed the Energy Improvement and Extension Act of 2008, virtually assuring the health of the solar roofing industry through 2016. Solar-powered roofs qualify for a 30% federal tax credit (directly reducing the property owner's federal tax bill), as well as a five-year accelerated depreciation.

"Solar's growth is explosive," says Registered Roof Consultant Michael Gumm. "Solar is where the Internet was in the early 1990s. It's also a time of great opportunity—and risk—and as the roofing contractor adapts to these new technologies."

Gumm is founder of SolarPower Restoration Systems Inc. and a roofing contractor by trade, so he understands the extra burden that solar systems place on the roofing system. The primary force that will affect the longevity of a solar roof system is the additional foot traffic experienced during installation and maintenance of raised panel or bonded photovoltaic (PV) solar systems.

That's why almost every major roofing manufacturer requires the use of a cover board to protect the roof membrane and insulation underneath. Most often, the cover board specified is a ¼" (6.4 mm) or ½" (12.7 mm) thick, DensDeck® Prime Roof Board for maximum impact resistance.

With most PV module manufacturers guaranteeing their products for 25-30 years, the roof system will have to stand up to decades of continual roof traffic.

"With solar systems selling from \$40-\$50 per square foot, you can bet that architects and building owners will want to make their roofs as durable as possible," says Gumm. At about \$0.50 per square foot, the extra cost of a DensDeck Prime Roof Board has become almost inconsequential when designers figure in the life-cycle cost benefits of extending the life of the solar roof system.

Roof-mounted solar systems

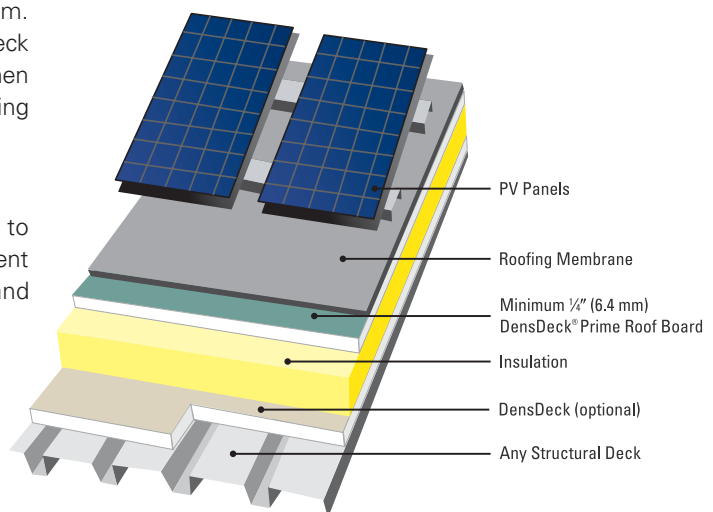
For years, building designers have found it convenient to locate HVAC systems, pipes, antennas and other equipment on the rooftop. Because the roof is open to the sky and



difficult to vandalize, it has also become the most logical support for most solar systems.

With property owners looking to minimize their building "footprint" and save on soaring land costs, rooftop solar systems don't require a nearby field and a fence surrounding the site to protect the sensitive solar equipment from damage.

However, the frequent need for solar roof inspections and maintenance means that the amount of foot traffic on these systems may be far greater than the traffic generated by an occasional piece of HVAC equipment on the roof. What's more, both raised panel and bonded PV systems often cover the majority of the roof surface, and both systems require regular inspections and maintenance.



* Information presented in this article concerning roofing systems and assemblies is presented as a general guide for illustration purposes only. Please consult the appropriate system manufacturer or design authority for system specifications and instructions for any specific system or assembly. Georgia-Pacific Gypsum does not provide roofing design services.

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continued from front

While glass and flexible polymer PV modules may last 25-30 years before replacement is required, system components also include wiring, switches, combiner boxes and a DC to AC inverter. The inverter is probably the weakest link in the system, with suppliers only recently increasing their warranties from five years to 10 years on the inverter, says Gumm. This pretty much guarantees that these solar-powered roofs will receive more visits from non-roofing maintenance crews than traditional systems.

Most raised panel solar systems consist of rack support made of aluminum trusses to secure conventional 38" x 58" (965 mm x 1,473 mm) solar panels to the roof. The racking system is attached to the roof with mounting brackets screwed into the support beams of the roofing system. Conventional racks require one or two support brackets per solar module.

Because all of this equipment needs to be maintained, the chance of sharp tools dropping onto the roof surface or impact damage from heavy traffic or equipment installation is greatly increased.

Better protection for single-ply roofs

Modern solar-powered single-ply roofs typically consist of a flexible membrane over a layer of polyisocyanurate (ISO) insulation. After years of weathering and UV exposure, single-ply membranes can become more vulnerable to impact damage and punctures. Exposure is worse if the insulation below has been crushed by previous impact or foot traffic.

Adding a cover board as a protective layer between the foam insulation and roofing membrane can moderate both of these problems on a solar roof installation.

A DensDeck® Prime Roof Board can handle compression loads in the 500-900 psi range. This makes the cover board hard enough to protect the foam insulation from impact and foot traffic, while supporting the membrane above.

"Solar is new and it's young, and we are going to see many changes in specifications as new solar manufacturers and technologies enter the market," says Gumm. "However, those who master the new technologies will become both successful and wealthy."

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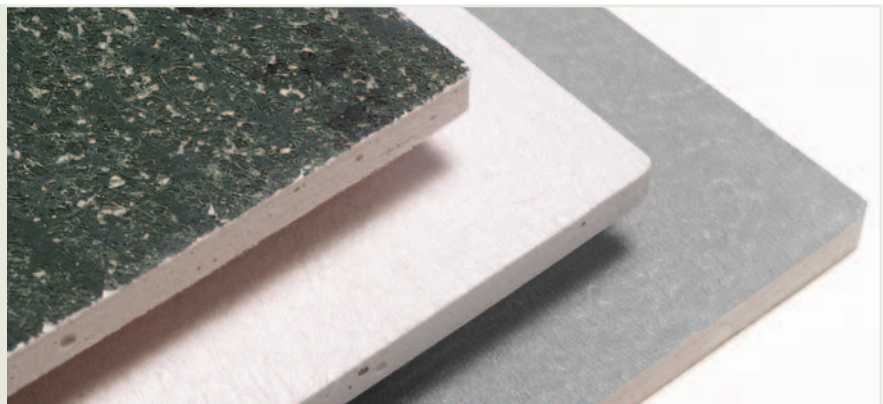
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