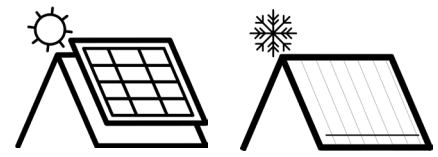




S-5-PVKIT® 2.0 & X-Gard™ 2.0

Case Study — Canadian Equestrian Multi-Purpose Barn



At-A-Glance

Project Name

Canadian Equestrian Multi-Purpose Barn

Location

Vernon, British Columbia, Canada

Owner

Bruce Goode

Architect

Timber frame engineering and design by Marcus Weiss and Daniel Kilchenmann of European Timberframe Corporation

General Contractor

Woodstyle Homes

Roofing Contractor

Artisan Roofing Ltd.

Solar Installer

Roost Solar, Inc.

Roof Profile

24-gauge Cascadia Metals Black SMP Standing Seam Metal Roof, 20" on center, 1-1/2" high rib, from New Tech Machinery SSH, SS150

Industry

Residential

Situation

The owner built a multi-purpose building that would also serve as a mounting platform for a solar PV system to provide 100% of the electricity needs for the entire equestrian ranch property. He wanted a barn built of fire-resistant materials since the property is located within a forest interface area. And, he wanted to reduce the risk of rooftop avalanches on his new slick metal roof.

The Result

The PVKIT allowed for a rail-less, aesthetically-pleasing, cost-effective PV mounting solution – saving the customer time and money on installation and materials – on his new fire-resistant, black metal roof. The X-Gard pipe-system provided superior holding strength required for the expected snow accumulation in this northern climate.

Project Stats

Roof Measured: 6,000 square feet

Roof Pitch: 8/12 upper roof

Project Size: 28.35 kilowatts

S-5! Products Supplied:

- X-Gard™ 2.0 (64 feet)
- X-Gard™ 2.0 bracket (37) with X-Clip II (36)
- S-5-S clamp (80)
- S-5-PVKIT® 2.0 in black (265 MidGrabs and EdgeGrabs)



The Project

Bruce Goode, a retired cattle-ranch owner and airline pilot, recently downsized and purchased a small 8-acre equestrian estate with spectacular mountain and lake views of the Okanagan Valley area of British Columbia, Canada. The property features a new 3,500-square-foot, multi-purpose barn with a 24-gauge Cascadia Metals Black SMP Standing Seam Metal Roof.

The spacious main floor will be used as a workshop area with a tack room and riders' lounge. The upper floor open loft area will be used as a "hunting lodge/cowboy shack" themed retreat and entertainment area complete with taxidermy mounts, in addition to a hobby/work area for gunsmithing and another area for exercising.

The Challenge

The owner's goal was to construct a multi-purpose building that would also serve as a mounting platform for a 28.35 kilowatt PV solar system, which would provide 100% of the electricity needs for the entire equestrian ranch property.

He also needed a roof that would meet the expected 25-30+ year service life of the PV system. Because the barn is located in the northern hemisphere, he needed to orient the roof and the solar panels for maximum solar gain.

Additionally, the property is located within a forest interface area, so a building constructed of fire-resistant materials was preferable. Furthermore, he wanted to reduce the risk of sudden and unexpected release of snow, potentially posing a serious threat to property and visiting guests below.

The Solution

The owner specified a standing seam metal roof for its sustainability and durability, since it is the only roof type with a service life that actually exceeds the service life of a solar PV system. This enables him to avoid potential costly disassembly of the PV array, re-roofing and re-assembly further down the road.

The ridge line of the barn roof was oriented exactly due east/west, to afford maximum solar gain for the 90 solar panel system mounted on the south-facing upper roof and lower roof surfaces.

The **S-5-PVKIT® 2.0** solar solution (in black to match the black anodized PV frames) enabled solar installers to direct-attach PV modules to the standing seams, eliminating the need for a traditional rail mounting system and provided a simple, secure, economical and penetration-free method for attaching the solar modules.

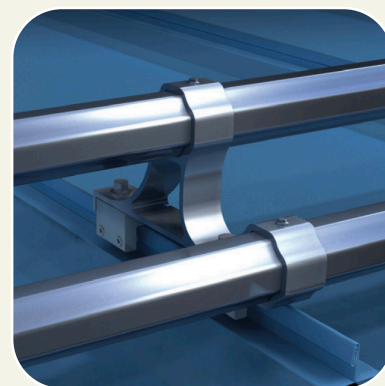
Additionally, in the event of a nearby wildfire, a metal roof was chosen for its non-flammable, non-combustible properties, since it will not spark and ignite into flames during a wildfire or lightning strike, which also helps the owner save on insurance premiums.

S-5!'s **X-Gard™ 2.0** snow retention pipe system was selected for its compatibility with the project's standing seam metal roof. It is mechanically attached with round-point setscrews, gripping the seam securely without penetration and without damage to the panels' protective finishes.



How Did the X-Gard Help?

- Powder coated to match the metal roof
- Provides height needed for mounting above solar modules
- Provided a penetration-free solution
- Designed and engineered on a site-specific basis
- Extensively tested for load-to-failure results



X-Gard™ 2.0

How Did the PVKIT Help?

- Cut material costs in half, including freight costs
- Cut installation costs in half
- Minimized the amount of time workers must spend in harness
- Improved aesthetics
- Eliminated the risk of a voided roof manufacturer warranty—no holes/no damage



S-5-PVKIT® 2.0

Long-Term Outlook

The PVKIT provides an aesthetically-pleasing, penetration-free PV mounting solution.

The X-Gard pipe-system reduces the risk of rooftop avalanches, providing superior holding strength required for the area's heavy snowfall.

"We've been using S-5! zero-penetration clamps on our solar projects successfully for years, and the release of the PVKIT 2.0 adds another S-5! product to our arsenal for standing seam metal roofs. Beyond the quality and ease of use we have come to expect from S-5!, the PVKIT's rail-less design is what makes it a no-brainer for us. Not only do we avoid the shipping, and on-site handling and leveling of rails, but we are able to reduce our overall cost per watt through lower material cost and installation time as compared to a rail-based solution."

—Stephen Russell, Owner, Roost Solar, Canada



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