Donald B. Smith Roofing Inc. installs a metal roof system on a stone home
by ***Krista Reisdorf***

A new house sits within a 200-acre (80-hectare) wooded estate in New Oxford, Pa. Large timber frames are exposed on the inside and outside of the building, giving it an appearance that fits with the surrounding woodland area.

"It's a great-looking home with cathedral ceilings and multiple levels," says Doug Smith, president of NRCA member Donald B. Smith Roofing Inc., Hanover, Pa., the company chosen to install the house's roof system. "A view of the house's great room with 30-foot- (9-m-) high exposed timbers brings to mind a building much like the Wilderness Lodge at Walt Disney World.®"

Photos courtesy of Donald B. Smith Roofing Inc., Hanover, Pa.

The homeowner, Doug Smith's cousin Donald Smith Jr., owns a construction company that works with Donald B. Smith Roofing daily and asked Donald B. Smith Roofing to install a custom-color metal roof system on the home. The project also included waterproofing the below-grade basement walls and installing an EPDM roof system on the house's terrace and deck areas.

Color choices

Donald Smith wanted to install a metal roof system with a custom color that would match the house's green window frames. He also initially wanted matching gutters, which later were changed to copper half-round gutters to accent the cornice.

"I really did not have to think about what type of roof system to put on my house," Donald Smith says. "I wanted a low-maintenance roof that would not need to be replaced in 15 years or 20 years. For some reason, it seems no one in this area is having much luck getting 30 years to 40 years out of 30- to 40-year asphalt shingles.

"I also wanted something that would be aesthetically attractive," he continues. "I believe standing-seam roof systems are the most attractive systems out there and have the added benefit of sounding great in a rainstorm."

The metal roof system installed on the house was 8,200 square feet (762 m²).

"The roof system consisted of an exposed tongue-and-groove plank ceiling with 3 inches (76 mm) of polyisocyanurate roof insulation and 5/8-of-an-inch- (16-mm-) thick plywood deck material," Doug Smith says. "The plywood was covered with a water barrier in the valley and eaves with two layers of No. 30 roofing felt installed over the main roof area."

Copper half-round gutters were installed to accent the cornice.

The metal roof system was a 16-inch- (406-mm-) wide PAC-CLAD® 0.032 aluminum Snap Clad™ roof panel from Petersen Aluminum Corp., Elk Grove Village, Ill., in a custom green color.

"Aluminum was chosen because Donald's company has been installing metal building materials, mostly galvanized, since the late 1960s," Doug Smith says. "He wanted to make sure the rusted edges didn't show on his house like they show on metal buildings. He also was aware Kynar® paint adheres better to aluminum than to galvanized metal."

The large roof panels were moved around the job site by a 45-foot (14-m) all-terrain forklift with a spreader bar.

The project was completed in multiple stages, and the crew worked with the masonry contractor to ensure proper reglets were installed at chimney and wall areas.

"The lower roof areas couldn't be installed until the masonry workers completed the stone walls above the roof line," Doug Smith says. "To ensure the EPDM roof system would not be damaged, the terrace area roof was completed after all trades were finished working on the level above the terrace."

In addition, Donald B. Smith Roofing waterproofed the basement with Carlisle SynTec Inc.'s CCW waterproofing membrane and installed a Carlisle SynTec 60-mil- (0.06-inch- [1.5-mm-]) thick EPDM roof system with 2-inch- (51-mm-) thick extruded PSI 60 Foamular insulation at the house's terrace and deck area.

A detour

Donald B. Smith Roofing faced some challenges along the way, including taking a less-traveled path when transporting materials to the site.

"The main entrance to the site wasn't completed during installation," Doug Smith says. "A stone road that crossed through a creek was used to access

the house. The township required a new entrance or bridge to use the old road as the driveway to the farm. Because the bridge was too costly, the owner created a new road, which wasn't completed until the end of the project. We didn't want to work on the job site after a spring rain because the excess water would make the creek rise and become impassable."

The company faced other obstacles, as well.

"Flashing any roof system wall detail against a stone wall always is a concern because the mortar joints in stone absorb water," Doug Smith says. "When you have a stone wall or chimney above a roof line, it is important to have reglets and through-wall flashing installed to remove the water from the inner wall cavity before it enters the house. We ask all our general contractors to install a smooth block wall at the roof line then install the reglet and through-wall flashing with weep holes. The masonry workers then will start the stone work above the weep holes to the finished elevations. If water enters the cavity, it runs down to the through-wall flashing and out the weep holes.

Donald B. Smith Roofing installed an aluminum roof system in a custom green color.

"Meeting and reviewing the flashing details with the owner and masonry contractor before installation made the task much easier to accomplish," Doug Smith continues. "Flashing a roof is easy when you are going to a smooth block wall instead of a stone wall at the roof line."

A unique challenge faced by Doug Smith was the fact that his customer was a family member.

"Don and I grew up together," Doug Smith says. "His father started the roofing company in 1948 before moving to general construction in 1956. The pressure always is increased when you are doing roofing work for family members. However, the roofing crew did a great job, and the entire family is delighted with the project."

Safety issues were resolved by using two 60-foot (18-m) manlifts to work on the edge of the roof and cornice. In addition, two roofing workers were tied off at the peak of the roof and wore harnesses.

Just like copper

"The aluminum roof system effectively complemented the house's stone work and tied into the color of its windows," Doug Smith says. "The 6-inch (152-mm) half-round gutter completed an elegant installation. Don was excited to have the green roof system because it produced an aged copper

look for the house."

Donald Smith was pleased with the outcome of the roof system installation.

"Now that the project is complete, I look at the house and could not imagine any other roof system on it that would look as good or fit the overall look," Donald Smith says. "The roof appears to be holding up well with no issues. The only maintenance performed was on a small leak at a chimney, which was related to a flashing and not the roof itself. I look forward to not needing to touch the roof for a long time."

Krista Reisdorf is associate editor of Professional Roofing *magazine.*

Project name: Donald Smith Jr. Estate
Project location: New Oxford, Pa.
Project duration: April 2003-August 2003
Roof system type: Metal and EPDM
Roofing contractor: Donald B. Smith Roofing Inc., Hanover, Pa.
Roofing manufacturer: Petersen Aluminum Corp., Elk Grove Village, Ill., and Carlisle SynTec Inc., Carlisle, Pa.