



# U.S. DEPARTMENT OF AGRICULTURE PUERTO RICO

## COMMERCIAL WINDOW AND DOOR DESIGNS

### PROJECT PROFILE

# REHAU Commercial Window and Door Designs Allow U.S. Department of Agriculture to Accomplish the Impossible in Pairing Aesthetics with Energy Efficiency

The U.S. Department of Agriculture achieves a great number of projects that positively impact millions of lives. When it came to restoring its own headquarters of the Institute of Tropical Forestry in Rio Piedras, Puerto Rico, however, it appeared to have an unsolvable challenge on its hands.

In restoring the facility's 14,000 ft<sup>2</sup>, three-story main building, which was built in 1943, the USDA needed to maintain the unique appearance of the wood doors and aluminum windows, while incorporating 21st century energy efficiency and durability.

Jeannette R. Rullan of RMA Architects, which coordinated the project, rejected dozens of designs during a multiyear search. Prior to the remodeling, she notes, the State Historic Preservation Office had named the building to the National Register of Historic Places. "As a significant historic building, preserving the aesthetics and original proportions of both the windows and doors was essential to preserve the character of this Spanish revival building," she says. This was a major obstacle to completing the project since it also had to achieve the increased energy efficiency required to be LEED-certified.

But manufacturer Paul Lambert of Storm King Windows and Doors was confident that it could be accomplished. "It was the most difficult project I've ever worked with – difficult, but not impossible," he says. Lambert's first two designs were rejected because they did not match the colonial aesthetics of the original wooden windows. His third attempt produced a perfect fit.

Lambert says he works exclusively with REHAU materials because of the manufacturer's ability to match design with performance. On this project, the versatility of the System 4500 hinged door design allowed him to use Panic hardware and ADA thresholds while still maintaining the original appearance.

For the windows, Lambert used the REHAU System 1400 casement design, a compression-seal projected window that provides high energy efficiency, hurricane-impact and acoustical performance and security. With U-factors down to 0.18, this system is significantly better than thermally broken aluminum.

Rullan attests to the System 1400's effectiveness. The windows, she says, allow a generous amount of sunlight in to light up the



**Project:** U.S. Department of Agriculture, Rio Piedras, Puerto Rico

**Type of Construction:** Office, renovated in 2013

**Scope of Project:** 14,380 ft<sup>2</sup> (1,300 m<sup>2</sup>) building; 450 windows and 7 doors

**Architect/Engineer:** RMA Architects

**Manufacturer:** Storm King Windows and Doors Inc.

**REHAU Systems Used:** System 1400 casement window and System 4500 hinged door

rooms and hallways while preventing the sun from overheating the inside environment. The air conditioning system no longer runs non-stop as it did with the leaky wooden windows, Rullan says. This is especially significant because electricity rates in Puerto Rico run 22.19 cents per kWh compared to about 8 cents per kWh in mainland United States.

The restored building has achieved LEED® Gold certification. Rullan says the building efficiency is designed to perform 36.5% better than the 90.1 2004 energy usage requirements developed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), adding that she fully expects this target to be exceeded.

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