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Photos courtesy of: Hallgren, Restifo, Loop & Coughlin Architects

## Wausau's copper-colored INvent windows help restore middle school's historic character, improve performance

Wausau, Wis. (May 2011) – Beaty-Warren Middle School in Warren, Pa., nears the completion of an extensive renovation to update and unify its 80-year-old facility. Gothic arches, turrets, steeply pitched rooflines, brick and stone masonry, and tall, narrow doors and windows distinguish the school's Tudor style. Matching the classic design, while increasing daylight, energy-efficiency, interior comfort, Wausau Windows and Wall Systems provided more than 300 high-performance, operable windows finished in a historically appropriate, copper color.



Architectural Window Concepts worked on an accelerated schedule in the occupied building, beginning in January 2011. With a six-month timeline as their goal, the field crew removed the existing units and replaced them with the new ones. Meeting the June deadline, the glazing team helped restore a cohesive appearance to Beaty-Warren Middle School's sprawling, 142,333-square-foot facility.

In 1930, architects Lawrie & Green designed the building as an impressive, Tudor style, educational institution on an 18-acre site by the scenic Conewango Creek. To accommodate the growing student population the school attracted, building expansions were added in 1936, 1955 and 1964. Throughout the decades, the school's windows were replaced mostly on an as-needed basis, resulting in dissimilar styles and performance.

In 2010, the Warren County School District Board of School Directors voted to replace Beaty's windows and selected Hallgren, Restifo, Loop & Coughlin Architects. "Our goal was to bring back the original intent and character of the building's design," said Chris Coughlin, the project's lead architect. "We knew that the windows would be an important piece in anchoring the original design aesthetic and tying together the building's many additions."

Dave Ulisse, Architectural Window Concepts' president, agreed and added, "There were many components to this project that needed to come together seamlessly." Among the challenges were creating profiles for the more than 65 different window sizes and replicating the original shapes and color of the windows' frames. Offering design flexibility at a competitive value, Wausau manufactured more than 80 projected windows from its flagship 2250 Series and 225 "simulated double-hung" projected windows from its new 4250i-XLT INvent™ Series.



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This is the first installation of Wausau's new 4250i-XLT INvent Series. Mimicking the look of traditional school windows, the INvent Series units were fabricated for Beauty-Warren with a beveled face, muntin grids and custom panning. The offset glass planes replicate the historic, double-hung sash, while providing the modern ease-of-operation, weather-ability and reliable performance of projected windows. In addition to the high-performance glass, an extra-wide, polyamide, thermal barrier is applied to the aluminum frame.

"All of the aluminum framing comes standard as a high recycled content. Linetec painted the aluminum in Copper Wire as a three-coat, 70% PVDF coating using specialized equipment to safely capture 100% of the VOCs released in the painting process," said Chad Walter, team leader for the Advantage by Wausau® products. "The products' recycled and recyclable aspects and the eco-friendly finishes demonstrate a respect toward the environment. The durability and low maintenance they provide demonstrate a respect for the bottom line."

The windows' triple-glazed, high thermal performance also contributes to both environmental and financial goals. According to Ulisse, interior temperatures have increased an average of 4 to 5 degrees in the classrooms and learning spaces. In Pennsylvania's cool climate, this translates into greater opportunity for energy savings through lower heating costs. In the warmer months, the windows can be opened for natural ventilation, without the need for air conditioning.

"The last window replacement happened during the 1970s," explained Ulisse. "In order to save energy costs, many classroom windows included a metal panel over the top one-third of the pane to keep out sunlight and help control temperatures. Unfortunately, it also kept out natural light."



To manage the increased daylight, Wausau's windows were installed with 1-inch, between-glass blinds. This allows the staff to control for glare, such as on a computer monitor. The units' integral construction also reduces maintenance compared with exposed window treatments in classroom settings. Unlike double-hung windows, there are no counter-balancing mechanisms to maintain or replace with projected units. INvent Series products are tested to meet AAMA AW-100 Architectural Performance Class ratings, including new AAMA 910-10 lifecycle testing to 4,000 operating cycles.



As part of the Advantage by Wausau standard product offering, these high-performance windows are pre-engineered and factory-glazed. Important to meeting Architectural Window Concepts' replacement timeline, Advantage by Wausau products are available on an accelerated delivery schedule and backed with an industry-leading warranty of up to 10 years.

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“I knew Wausau had the products, experience and talent to handle all of the issues this job presented,” said Ulisse. He noted that before the project was wholly finished, the window replacement team’s efforts were receiving compliments from the occupants, the architects and District.

“Our office is very pleased with the design aesthetic,” praised Coughlin. “The windows reflect the aesthetics that would be expected on a school from this particular era, yet add the performance we expect today. The color of the window frames and muntins is fantastic: They look as if they have always been there. The integral blinds as part of the triple pane system was an added bonus.”

“The Beaty community really feels that the new windows make it seem like a new school,” concluded Ulisse.



**Beaty-Warren Middle School; 2 East Third Avenue, Warren, Pennsylvania;  
<http://www.wcsdpa.org/beaty-warren.cfm>**

- Owner: Warren County School District; North Warren, Pa.; <http://www.wcsdpa.org/index.cfm>
- Architect: Hallgren, Restifo, Loop & Coughlin Architects; Erie, Pa.
- Window systems – contractor: Architectural Window Concepts, Export, Pa.
- Window systems – manufacturer: Wausau Window and Wall Systems; Advantage by Wausau® 4250i-XLT INvent™ Series and 2250 Series; Wausau, Wis.; <http://www.wausauwindow.com>
- Window systems – glass: PPG Industries; Pittsburgh; Solarban® 60; <http://www.ppg.com>
- Window systems – finisher: Linetec; Wausau, Wis.; <http://www.linetec.com/>
- Photos: courtesy of Hallgren, Restifo, Loop & Coughlin Architects

*Nationally recognized for its innovative expertise, Wausau Window and Wall Systems is an industry leader in engineering window and curtainwall systems for commercial and institutional construction applications. For more than 55 years, Wausau has worked closely with architects, building owners and contractors to realize their vision for aesthetic beauty, sustainability and lasting value, while striving to maintain the highest level of customer service, communication and overall satisfaction. Wausau is a part of Apogee Enterprises, Inc., a publicly held, U.S. corporation.*

*Wausau and its staff are members of the American Architectural Manufacturers Association (AAMA), the American Institute of Architects (AIA), the APPA – Leadership in Educational Facilities, the Construction Specifications Institute (CSI), Design-Build Institute of America (DBIA), Glass Association of North America (GANA), the National Fenestration Ratings Council (NFRC) and the U.S. Green Building Council (USGBC).*

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