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Connecticut’s 195 CHURCH offices’ window retrofit increases energy efficiency, occupant comfort and savings

Minneapolis (Nov. 2017) – Located on the New Haven Green, 195 CHURCH is undergoing a $6 million energy-efficient window and lighting retrofit. Implementing recommendations from Globelé Energy and Apogee Enterprises, Inc.’s Building Retrofit Strategy Team, the property’s tenants already are experiencing more comfortable workspaces. The building owners, 195 Church Street Associates, LLC, are also noticing significant annual energy savings; it is on track to earn an estimated $589,000 rebate from utility provider United Illuminating through the EnergizeCT initiative.

“There has not been a capital improvement of this magnitude to a building in New Haven in many years,” observes Christopher Vigilante, chief operating officer of Northside Development Co., the property management company for 195 CHURCH where Northside Development Company also is a tenant. Currently, the 244,000 square foot, 18-story, Class A office building is 75 percent occupied with 28 tenants and 340 occupants.

***Improving on History for a Better Future***

Built in 1974 and largely constructed of concrete, 195 CHURCH reflects the materials and style of the era. The original windows remain functional, but were manufactured at a time before low-e insulated glass and improved thermal breaks in the aluminum framing were available.

In addition to the aging windows, the property’s all-electric baseboard heating and variable-air-volume system with electric reheat contributed to large utility bills. Seeking to improve the building’s energy efficiency, Northside worked with Globelé Energy, LLC, to review the property per the U.S. Department of Energy’s benchmarking program and by performing a Level 1 ASHRAE energy audit.

**As a** regional electric distribution company, **United Illuminating (UI) provides energy efficiency programs through the EnergizeCT initiative. This initiative is designed to advance the efficient use of energy, reduce air pollution and negative environmental impacts, and promote economic development and energy security.**

“UI’s energy engineer Gary Pattavina was instrumental in guiding us through the plan and offered very helpful advice and guidance through a very intricate process,” says Vigilante. “The goal was to make this building as efficient as possible thus doing the right thing for the environment and also producing a very good return on our investment.”

Pattavina notes, “Electrically heated buildings are a great candidate for energy efficiency measures and these types of projects are exactly what we look for at UI. We recognize new energy-efficient windows are a costly investment and the incentives available to our customers help bring that up front cost down significantly. We were very excited to work with the customer and their design team to help them achieve the energy savings on this window replacement project.”

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***Modeled for Savings***

To achieve the owner’s energy reduction goals, Globelé outlined a multi-phased plan. Phase I recommended replacing the old fluorescent lights with new LEDs and updating the 43-year-old windows. Helping Northside’s team select the optimal window system, Apogee Building Retrofit Strategy Team provided an annual energy savings forecast showing the potential savings offered with Wausau Window and Wall Systems’ 1297 Series S.E.A.L. interior accessory windows.

Interior accessory windows are installed from the building’s interior over the existing windows, which were sealed closed to prevent air infiltration. For 195 CHURCH, Wausau’s S.E.A.L. units feature Viracon’s RoomSide™ low-e glass and aluminum framing members finished by Linetec in Dark Bronze anodize.

Using the eQUEST energy modeling physics-based software tool to simulate the performance of a building on an annual basis, the Apogee Building Retrofit Strategy Team forecasted the level of energy savings that could be achieved by adding an interior accessory window with low-e glass to the existing glazing. From this data, performance predictions were provided on annual energy, peak demand and daylight energy use.

“Today’s energy-efficient windows can dramatically lower the heating and cooling costs associated with windows, while increasing occupant comfort,” says Apogee Building Retrofit Strategy Team’s certified energy manager, Mike Sheppy. “Optimizing natural light also can contribute to a building’s energy efficiency and tenants’ wellbeing.”

***Increased Daylighting and Comfort***

Viracon’s RoomSide low-e glass also improves light-to-solar gain (LSG) ratio by 21 percent. Sheppy explains, “This improved LSG ratio increases the number of hours in the year that natural daylighting can be used without tenants having to draw their blinds. In addition, electrical lighting can be dimmed or turned off with daylighting controls.”

He continues, “Furthermore, according to the World Green Building Council, natural daylighting can save up to $2,000 per employee in office costs by increasing occupant comfort, leading to higher productivity. Adding an interior accessory window with low-e glass to the existing glazing significantly improves occupant comfort because surface temperatures are much closer to room temperature.”

In Connecticut’s cold months, Sheppy says, “The new glazing will keep the occupants seated in the perimeter spaces of this building more comfortable by significantly reduced radiant heat transfer. These improvements will allow occupants to sit closer to the windows, increasing the usable floor space of the building.”

Comparing the window bays before and after the retrofit, thermal imaging shows window surface temperature differences of nearly 20 degrees Fahrenheit. Sheppy describes, “The new windows stand out in sharp contrast against the old windows. This indicates that the new windows are keeping out the cold 34 degree Fahrenheit outside conditions, while keeping in the warm 72 degree Fahrenheit inside conditions.”

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***Window of Opportunity***

Energy-efficiency upgrades and renovations on 195 CHURCH began in the summer of 2016. Milestone Construction Services, LLC substantially completed the window retrofit by May 2017. To complete the building retrofit on the last two floors, Milestone is waiting for a more convenient time that minimizes disruption to the tenants.

Northside’s Vigilante compliments their efforts, “Milestone did an incredible job on the installation. Of course, vacant offices are a piece of cake, but when you get into occupied offices, which need to be completed on nights and weekends, it’s a completely different story. The efficiency of their crews were amazing. All offices that had windows in them had to have blinds removed, windows cleaned (existing and new), furniture moved, electronics disabled and reinstalled...oh and then you had to install the new insert windows and caulk them. Milestone took pictures of every office before anything was touched and they made sure it was put back perfectly. They did an amazing job with no added stress in my life.”

He adds, “There were a lot of pieces to this puzzle and Milestone made this the easiest construction job that I have ever been involved with.”

When completed, Milestone will have updated 1,400 window units totaling 42,336 square feet. More than 1,200 of these interior accessory windows units were 4 by 8 feet. The rest were narrow 1.5 by 8 feet, installed on the South elevation. Wausau also provided the field measurements to ensure the best possible fit.

“It’s a top-notch team at Wausau,” praises Vigilante. “From the sales department to the modeling department to the delivery of truckloads of windows – the process was nearly flawless. They build a great product and deserve a lot of recognition for their team’s products and processes.”

***Making the Goal***

Vigilante also is quick to recognize Globelé’s important role, saying, “Elena Cahill and her staff guided me through the world of energy purchasing, as well as introducing me to the UI’s energy incentive programs. We are all proud of the fact that we were one of the first approved building in the UI territory to be able to receive incentives for the installation of window inserts, something that would not have happened were it not for the team that Globelé brought to the project.”

He elaborates, “The year before we bought this building the electric costs were approximately $1.2 million per year. We believe that through correct energy purchasing and our load reductions from our energy savings programs we will reduce our bill by 50 percent.”

Cahill agrees, “This building is poised to meet or exceed their energy savings goals.”

As the lead auditor for this building, Globelé Energy’s Alfred Peterson points out that the project’s “success is measured by sustainable reduction in energy for a single Energy Opportunity or as a Comprehensive Initiative of two or more projects as was bundled for 195 CHURCH.”

Based on this measure of analysis, Wausau’s new S.E.A.L. units, in combination with the new LEDs, are anticipated to save 29 percent in annual electrical energy consumption. Estimates show a yearly electrical energy savings of $0.95 per square foot of floor space, reducing the owner’s roughly $805,000 annual electricity bill by $203,000.

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***Efficient, Attractive and Vibrant***

Throughout the energy-efficiency updates, Northside collaborated with Kenneth Boroson Architects, LLC. “KBA is our architectural firm for the entire building,” notes Vigilante “They designed the office fit-ups, lobby renovations, conference suite design, upcoming fitness center and lounge additions, etc. They are involved in almost every aspect of design for this building.”

Demonstrating the owner’s commitment to design, performance and comfort, Vigilante summarizes, “From purchase in December of 2015, we have replaced the exterior sidewalks, remodeled the lobby, added a state-of-the-art 4th Floor Conference Suite, installed 9,000 LED lamps, installed 1,400 new energy-efficient window inserts and have re-positioned the building in the market adding new tech companies as tenants. A new gym is expected in 2018. We have added life and vibrancy to a landmark building in New Haven.”

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***195 Church St., New Haven, CT 06510***

* Owner: 195 Church St. Associates, LLC; New Haven, Connecticut
* Property management: Northside Development Co.; New Haven, Connecticut; <http://northsidect.com>
* Architect – lobby and conference room renovations: Kenneth Boroson Architects, LLC; New Haven, Connecticut; <http://www.kbarch.com>
* Utility company: United Illuminating Company; New Haven, Connecticut;   
  EnergizeCT initiative, <https://www.energizect.com>
* Energy consultant: Globelé Energy, LLC; New Haven, Connecticut; <http://globeleenergy.com>
* Window contractor: Milestone Construction Services, Inc.; East Haven, Connecticut; <http://milestonecsllc.com>
* Window renovation strategists: Apogee Enterprises, Inc., Building Retrofit Strategy Team; Minneapolis; <http://www.apog.com>
* Window systems – manufacturer: Wausau Window and Wall Systems, an Apogee Enterprises Company; Wausau, Wisconsin; <http://www.wausauwindow.com>
* Window systems – glass fabricator: Viracon, Inc., an Apogee Enterprises Company; Owatonna, Minnesota; <http://www.viracon.com>
* Window systems – finisher: Linetec, an Apogee Enterprises Company; Wausau, Wisconsin; <http://www.linetec.com>
* Photos by: Woodruff/Brown Architectural Photography

To learn more about Apogee’s Building Retrofit Strategy Team’s services and success stories, please visit <http://apog.com/renovation.html> or contact John Bendt at [jbendt@apog.com](mailto:jbendt@apog.com), 612-790-3137; or Kevin Robbins at [krobbins@apog.com](mailto:krobbins@apog.com), 715-409-0821.

*Apogee Enterprises, Inc.’s Building Retrofit Strategy Team, in conjunction with the its businesses, assists building owners and property managers evaluate the benefits of window renovation and upgrades, such as improving the appearance of the building, saving energy, downsizing HVAC loading, reducing maintenance, lowering vacancy rates, increasing rental rates and enhancing the value of the building.*

*Apogee’s business units supporting these building retrofit strategies include Alumicor; EFCO Corporation; Harmon, Inc.; Linetec; Sotawall; Tubelite Inc.; Viracon, Inc.; and Wausau Window and Wall Systems.*

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