

The lighting approach was to illuminate from afar, near and close to capture the building's intricate detailing and to correct inadequate lighting.

(Opposite) The *Four Continents* are lighted by high-output LEDs, along with metal halide PAR30 lamps. These replace 1,000-W metal halide floodlights which left them dark in silhouette.



The relighting of the landmark U.S. Custom House opened New York City's eyes to a structure that for too long had been lost in the shadows

REINVENTING HISTORY

BY REBECCA FALZANO

Even though it's around 9:30 on a Monday night, the plaza in front of the Alexander Hamilton U.S. Custom House at Manhattan's southern tip is host to tourists with cameras and admirers sitting on the steps of its grand entry stairway. For Randy Sabedra and Patricia DiMaggio, who were integral to the structure's recent relighting, this was a refreshing scene. The Custom House, a steel-framed, Beaux Arts-style, seven-story National Historic Landmark facing New York City's Bowling

Green, is a grand structure replete with statues, a frieze of entablature, arches, columns and an entry staircase. However, prior to its relighting this past May, the ornate details of this 100-year-old icon were lost—the building had fallen victim to its own lighting.

The idea to relight the Custom House in time for LIGHTFAIR 2007 came from DiMaggio, OSRAM SYLVANIA's commercial engineer for the New York area and project manager on the project. One night after walking past the Custom House,



Photos: Tom La Barbera, Picture This Studios



Photo: Randy Sabedra

(Left, before) Prior to the relighting, the *Four Continents* went dark in silhouette; the building's roof had a green glow caused by mercury lamps; excessive shadows from floodlights at the base created high contrast; and the façade was bathed in a rainbow of hues from a color shift in the metal halide sources.

(Top right, before) The entryway was formerly outfitted with fiber optics beneath backpainted glass panels leaving it dark and unsafe for the public. (Bottom right, after) Now, it has two rows of LEDs that uplight the vault, providing a safer grand entry.

DiMaggio noticed the lighting did not do the grand structure justice. "The building appeared gloomy and eerie since all the light was washing up the façade. I really could not see all the intricate details; the *Four Continents* were in shadow, along with the detailing around the windows," says DiMaggio.

It was at this point that she decided to meet with Con Edison, representatives from the Smithsonian and the GSA to begin the development of a new lighting design and installation that would call at-

tention to the building's features, while saving energy. Enlisting the expertise of Sabedra of RS Lighting Design in Manhattan, the team gave the 450,000-sq ft structure an exterior lighting overhaul just in time for its centennial in May, National Historic Preservation Month and a tour by industry professionals during LIGHTFAIR. OSRAM donated all light products, designer fees, materials and installation for the more than 150 lighting fixtures.

Designed by Cass Gilbert, the Custom House is home to the



Photo: Randy Sabedra



Photo: Tom LaBarbera, Picture This Studios

Smithsonian's National Museum of the American Indian George Gustav Heye Center, the U.S. Bankruptcy Court for the Southern District of New York and the U.S. Customs and Border Protection office. The design team had three goals: maintain the building's historic and architectural integrity; replace older technologies with new, more energy-efficient and environmentally responsible ones;

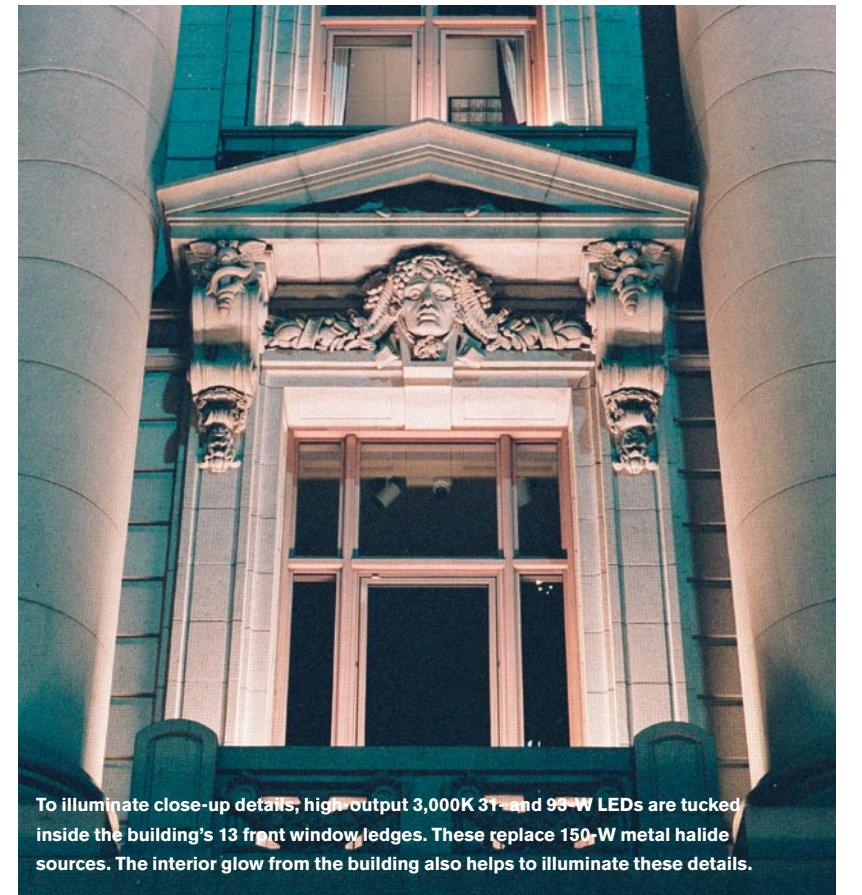
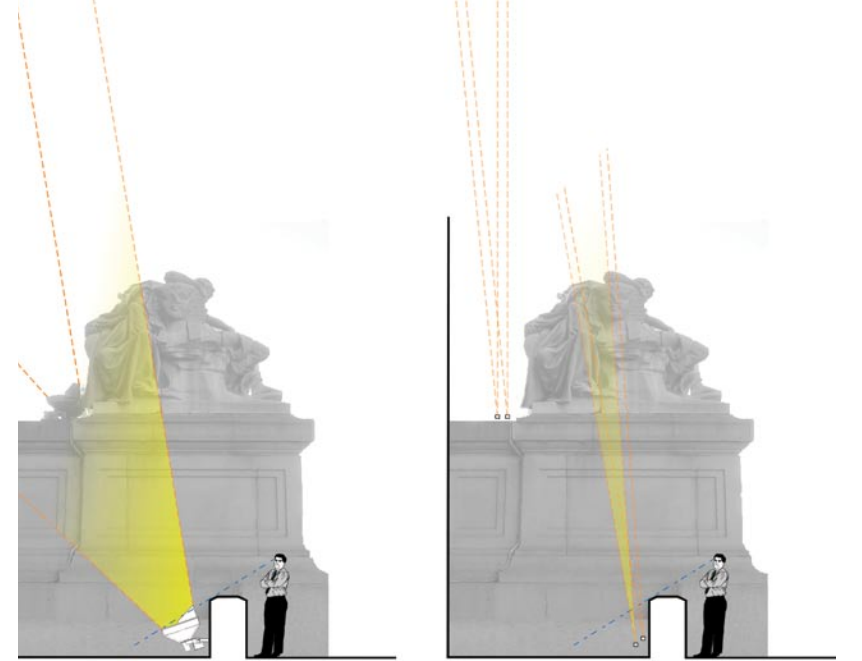
and ensure the safety of people who live nearby, work inside and visit the building's vicinity by providing illuminated grounds. For the design team, meeting the client's needs was only a part of the overall goal. "While the lighting solution was to satisfy the building owners, I also knew passersby and visitors would enjoy the beauty night illumination added to the night streetscape experience. The illumination of the Custom House is as much for New York City as the building's occupants," says Sabedra.

The team had to first address how the original lighting fell short and determine ways to improve it. For starters, the grand entry stairway was dark, making it an unsafe space for the public. In addition, the regal female statues of Daniel Chester French's *Four Continents* that flank the stairway went dark in silhouette, their intricate details left uncaptured. The building's mansard roof had an eerie green glow caused by mercury lamps, while excessive shadows from visible floodlights at the base of the structure gave high contrast to the façade, which was unattractively bathed in a rainbow of hues from the color shift that had taken place in the metal halide sources.

FROM NEAR TO FAR

Sabedra's approach was to let the building's interior inspire the exterior illumination. "We studied how the interior glowed, then enhanced what overhangs, openings or details would catch light," explains Sabedra. While the project's technical goals were to improve energy and

(Left) Illustration showing the scale and location of wide-distribution floodlights within the below-grade pits, prior to the relighting. (Right) Post-relighting, illustration showing the scale and location of new very narrow distribution floodlights within the below-grade pits.



To illuminate close-up details, high-output 3,000K 31- and 98-W LEDs are tucked inside the building's 13 front window ledges. These replace 150-W metal halide sources. The interior glow from the building also helps to illuminate these details.



The *Four Continents* are lighted from multiple directions to render the sculpture detail and express depth.

maintenance, the design goal was to improve the quality of lighting—that is to enhance the façade’s rich detail and streetscape presence. Sabedra’s design approach also considered how the building would be seen from afar, near and close.

Lighting Far. “When seeing the building’s mass from blocks away, no detail is seen. The entire façade and immediate streetscape are bathed in moonlighting,” says Sabedra. A building’s presence in relation to its surroundings can be

created by floodlighting the entire façade and placing light in adjacent areas, such as neighboring buildings. This is exactly what the team did for the Custom House. Natural moonlight and rooftop floodlights provide illumination from afar via 1,000-W 10-deg beam 4,000K metal halide floodlights (from se’ lux) positioned atop neighboring buildings. This required coordination with the adjacent building owners to arrange the installation of the floodlights and subsequent electrical bills.

Lighting Near. When approaching the building and standing directly in front of it, detail can be seen. The use of warm accent and cool fill highlights form and contour. For example, the fifth story’s top-edge sculptures, representing the commercial and seafaring powers of world history, are illuminated with 20-W 3,000K PAR30 metal halides with beams angled to highlight the structures from the ground floor. Originally, they were 35-W PAR30 halogen lamps. The seventh floor received similar lighting techniques, benefiting from 39-W PAR30 and ceramic HID 70-W PAR30 fixtures.

Perhaps the most prominently viewed details seen from near are the *Four Continents*. These intricately detailed statues at the front entrance represent Asia, America, Europe and Africa, and are lighted in silhouette by 31- and 93-W high-output LEDs, as well as accent lighted with 70- and 39-W 3,000K metal halide PAR30 lamps. Originally, 1,000-W metal halide floodlights were located in the airways and behind the *Continents* leaving them dark in silhouette. Upright grazer fixtures within the pits and behind the statues correct this. Now, they are lighted from multiple directions to render the sculpture detail and express depth by highlighting some areas, while allowing others to fall into shadow.

Lighting Close. “When one walks up the steps, enters the entrance and looks up, or walks around the *Continents*, detail can be seen up close and from various angles. The use of small concealed

A Monumental Relighting

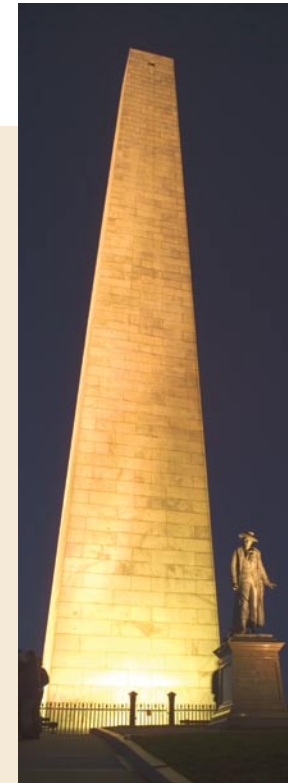
At 221 feet high, the Bunker Hill Monument in Boston, MA, marks the location of the first major Revolutionary War battle. Almost 200,000 people visit the site each year, making it one of the most popular attractions on the Freedom Trail.

The relighting of the monument marked the culmination of a two-year lighting redesign project. The new lighting scheme—made possible in part by a \$100,000 grant from OSRAM SYLVANIA—was meant to conserve energy, foster pride in the heritage of Boston, improve public safety and encourage pedestrian activity after dark.

Chris Ripman of Ripman Lighting Design developed a concept that features compact fixtures with ceramic metal halide lamps to highlight the strong simple geometries of the monument and direct light away from homes that surround the site.

The Bunker Hill Monument National Historic Site lighting plan celebrates the structure, anchoring its composition and helping it to reclaim its place in the visual hierarchy of the Boston skyline.

—Rebecca Falzano



fixtures with controlled optics and shielding illuminates these details,” says Sabedra. Prior to the relighting, the entryway was outfitted with fiber optics below backpainted glass panels and two lantern fixtures which did little to illuminate the space. Now, two rows of LEDs uplight the vault. The previous lighting on the ground floor was replaced with LED surface-mounted linear floodlight luminaires (from IO) that utilize high-brightness LEDs. Nine fixtures were installed

in the below-grade pits to provide a safe, well-lit sidewalk area.

In addition, for the mansard roof, 39-W PAR metal halides replace the 100-W R40 mercury sources, correcting its former greenish glow. Also helping to illuminate the close-up details are high-output 3,000K 31- and 93-W LEDs tucked inside the 15 window ledges. These replace 150-W metal halide. The building’s interior glow also helps to illuminate the façade and close details of the window ledges.

Energy savings were a large component of this project. The lighting system features efficient light sources such as LEDs, ceramic metal halide and halogen. By incorporating these fixtures, the GSA—according to calculations by Con Edison—will lower its electrical load by 56.9 percent, and is projected to save approximately \$6,654 on its annual electricity bill, which is the equivalent of 15.5 tons of carbon dioxide emissions, using the Mayor’s PlaNYC 2030 conversion standard. The original building attached lighting load was 17,955 watts, compared to just 7,740 watts following the relighting.

The Custom House’s former lighting inefficiencies are now just history. 🌟



About the Designers: Randy Sabedra, Member IESNA (2001), has more than 20 years of experience in architectural lighting design and currently heads his own firm, RS Lighting Design. He began his career at H. M. Brandston & Partners and Kugler Tillotson Associates, where he was the lead designer on a variety of projects and co-received an IESNY Lumen and IALD Award of Excellence in 1991 for the Bulgari Jewelry Store in New York, and was part of the design team that earned an IESNY Lumen Award in 2003 for the Schlumberger Offices in New York. In 2005, Mr. Sabedra was elected president of the IESNY for a two-year term.



Patricia DiMaggio, Member IESNA (1995), is a commercial engineer for OSRAM SYLVANIA in the New York Metropolitan area. She works with the architectural lighting design and engineering community to develop specifications and provide technical support on products and industry issues. Ms. DiMaggio teaches lighting design at the New York School of Interior Design. She is on the Executive Board of Managers as immediate past president of the IESNA New York Section.