

PROJECT

sult, some of the street lighting is designed at the south side only and provides spillover lighting towards the sidewalk and the building.

Second, on the south side, the exterior ramp, known as La Traverse, takes people from the street level onto the “green” roof. La Traverse is illuminated with lines of light which cross the ramp at regular intervals but have sharp cut-offs so there are significant light and dark areas creating a lattice-type of effect. Along this point, fixtures installed in a concrete parapet have two MR16 sources located one above the other in rectangular metal plates. They are arranged so as to create the visual effect of two “dots” and a “dash”—once again drawing on the Morse Code. This effect carries up onto the roof and over, towards the gardens and memorial.



In the artifacts gallery, back lighting casts an even wash of light against the walls, and recessed lighting at the base of supporting columns casts light upward.

One of the museum’s more spectacular exterior features is the roof’s copper “mountain.” It is illuminated on both sides by ground-mounted metal halide lights. When the mountain reaches its apex, which is located over “Regeneration Hall,” the mountain’s tip is illuminated by two 1000-W in-ground lights.

The north face of the museum is illuminated with intermittent metal halide sources integrated with the shrubbery. The parking lot



Freedom of Expression

“**T**he Price of Freedom: Americans at War,” an 18,600 sq ft exhibit located

at The National Museum of American History, in Washington, D.C., chronicles the history of America’s military from the colonial era to the present. Artifacts include uniforms of Generals George Washington, Andrew Jackson and George Custer; a cannon used in the War of Independence and a complete Huey helicopter from Vietnam.

For lighting designer Steven Rosen of Available Light, Boston, the exhibition offered a different type of freedom: the opportunity to try something a bit unconventional in terms of the light source. Since designers were forced to work within the infrastructural limits of the existing gallery, which provided scant electrical service, Available Light researched, tested and ultimately deployed alternative light source technologies in the gallery luminaires. “Traditionally, exhibits are lit using incandescent light sources, which are renowned for their excellent



color rendering properties but disdained due to both their high-energy requirements and relatively short lamp life," says Rosen. "After much initial—and well-placed—pessimism, we were able to demonstrate that current generation metal halide light sources had come of age and were capable of replacing the incandescent source. Consequently, we were able to reduce our electrical requirements by 50 percent and quadruple time between lamp changes—all without compromising a dramatic and compelling visitor experience."

Except for the halogen-driven fiber optic illuminators and a couple of small areas that required theatrical dimming/show control, the entire gallery is ceramic metal halide.

Luminaires were supplied by LSI, Altman Lighting and ETC. The lamps were supplied by Philips and OSRAM SYLVANIA. Rosen describes the specifying process.

LD+A: *How difficult was it to overcome the skepticism about metal halide?*

Rosen: *Very difficult. It took a number of visits to the museum with curators, conservators, project managers, administrators, exhibits people and the lighting department. We did mock-ups, presentations and head-to-head comparisons explaining why we wanted to do this and why it was a good idea. The track fixture manufacturer also did several presentations. After a while I think the staff realized we were serious about this and believed we were doing it for all the right reasons. They finally said "go!"*

LD+A: *How knowledgeable was the client about lighting and light sources?*

Rosen: *Well, the client was very familiar with what they had in their museum. American History has a fabulously capable and dedicated lighting maintenance staff and they take great pride in their work. But ceramic metal halide was not part of its current kit o' parts. But once we presented the data—color rendering, low UV emissions, high output with low wattage, long lamp life, etc.—they began to buy in. Not surprisingly, our collective single biggest concern was color rendering. In a museum full of halogen spots how could CMH compete? In the end, I was more pleased with the crisp white light of 3000K CMH than I was with the traditional halogen light. White was white, cool colors*

popped and earth tones/ambers all looked great. It was like peeling a ruddy patina off the trackheads!

LD+A: *Why "take the chance" with metal halide if incandescent is so traditional in exhibits? Had you used metal halide on other exhibits?*

Rosen: *We had used CMH in limited quantities and almost always as a source intermingled with halogen. Mostly we used the CMH in theatrical framing projectors that did not require dimming. We took up the cause of CMH for "Price of Freedom" in the first place because, as we embarked on this new exhibit in a very old gallery, it was clear that the power available was not going to support the style of lighting we wanted to embrace: lots of layering of light (accents, color washes, multi-directional sculpting light, fields of texture, etc.). Finding a low wattage source was critical to achieving the overall timbre that we envisioned.*

LD+A: *What is the expected life-cycle for the metal halide sources?*

Rosen: *Lamps are rated 10-12,000 hours (at 10 hours per day times seven days a week that would be three years of service). As both the technology advances and more installations are available for analysis, the lamp companies keep upping the rated lamp life of CMH.*

—Paul Tarricone