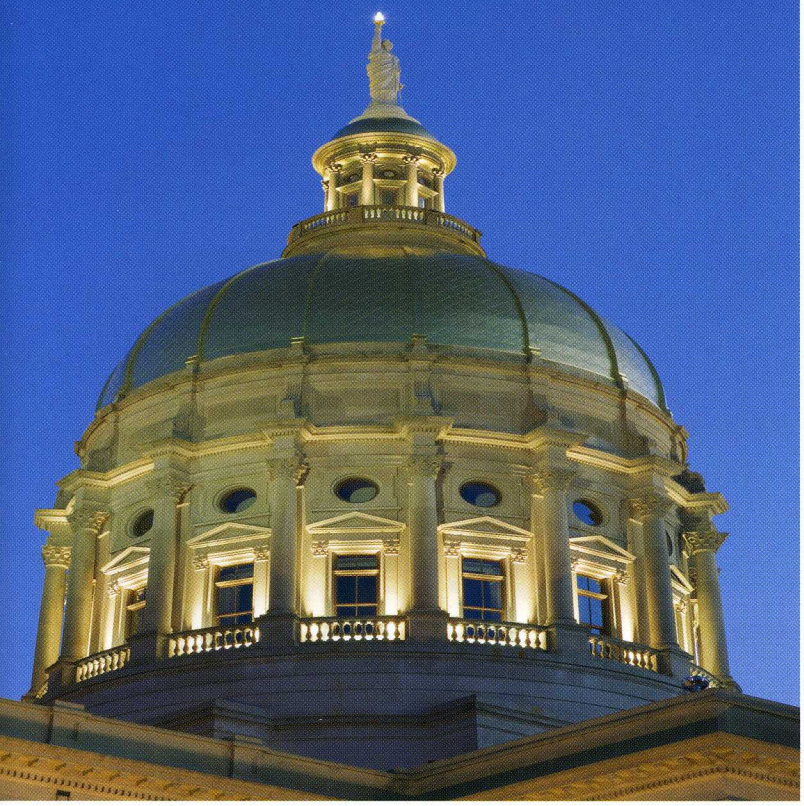
LD+A
LIGHTING DESIGN + APPLICATION



SKYLINE STATEMENT

BY VILMA BARR

Illumination of the Georgia State Capitol dome was as much an exercise in urban planning as it was in lighting design

By day, it was not a problem for the glistening gold dome of the Georgia State Capitol Building in downtown Atlanta to make a statement among its skyscraper neighbors. But come nightfall, dated and inadequate lighting diluted its commanding daytime visual presence. The dome appeared almost two-dimensional after dark, failing to communicate its symbolism as the seat of government for the country's ninth largest state, located in its most populated city.

Georgia's Capitol Building is modeled, like numerous other state capitol structures in the U. S., after the nation's capitol in Washington, D.C. Sited on one of the city's higher points at Capitol Square and Washington Street, it was designed by the Chicago architectural firm of Edbroke & Burnham. When completed in 1889, with its gilded dome, monumental neoclassical architectural details and topped by a 15-ft-high Greek-inspired torch-bearing statue called Miss Freedom, it was hailed as a dramatic symbol of the New South.

When the 1996 Summer Olympics were staged in Atlanta, the dome underwent a minimal relighting. Then, in 2002, the state appropriated $70 million for a phased base-to-dome exterior and interior renovation. Principal architect for the project was the Historic Preservation Studio at the Atlanta-based firm of Lord Aeck & Sargent (LAS). CD+M Lighting Design Group, Atlanta, was retained to develop a new lighting scheme to impart visual drama to the dome. CD+M founder and principal, Ted Ferreira, led a team that included designers Christie Cari and Christopher Cheap.

The building itself and its function as the state's central government facility presented unique challenges regarding fixture location. "We had to be familiar with numerous environmental constraints and matters of scale in planning the fixture placement," says Cari. There are adjacent buildings on three sides and 50-ft-high trees, plus the governor's rooftop helipad next to the dome. "Our role, in conjunction with the architect's master plan for the entire structure, was to decide how to light the dome as beautifully as possible, and to reveal its architectural details," Cari notes. Adds Ferreira, "Everyone involved wanted to have the dome relit, but nobody wanted to see the lights themselves."

The rotunda had been lighted primarily

with fixtures mounted on the parapets at an extremely steep angle with 400-W high-pressure sodium (HPS) lamps, resulting in deep shadows above the curve of the 75-ft-diameter dome and at the upper cupola. A mix of lower-wattage metal halide lamps and HPS lamps created hot spots and an uneven color on the structure's Indiana limestone and the dome's gold leaf skin. "The lower part of the dome was bathed in sodium which didn't flatter the limestone," Ferreira recalls. Cantilevered sodium flood lights aimed at the upper cupola created a harsh mirror reflection.

FIXTURES BE GONE

On their initial site visit, Ferreira and Cari counted over 20 floodlights visible at the parapet, in addition to metal halide floodlights and HPS floodlights mounted on the balconies. "The entire roof of the dome and most of its balustrade, ornate columns and the Ms. Freedom statue had never been seen at night prior to the relighting," Ferreira points out. "The technical challenge was to determine how to obtain a shallow enough angle that would allow us to light the entire roof without sacrificing uniformity. We had to get the majority of the fixtures off the capitol building itself," he says. As a result, CD+M's scheme called for using the rooftops of the surrounding buildings supplemented by pole-mounted luminaires.

On the north and south sides of the capital are state-owned buildings. On the west side is a church. Ultimately, fixture placement had to be approved by the governor's staff, which was concerned about potential glare from the luminaires due to the close proximity of the governor's helicopter's platform. Another concern was shielding the luminaires so that drivers coming down the hill towards the nearby expressway wouldn't be blinded by lights beaming upward to the dome. In addition, designated rooftops contained assorted structures and mechanical units that had to be avoided.

COMPUTER MODELING

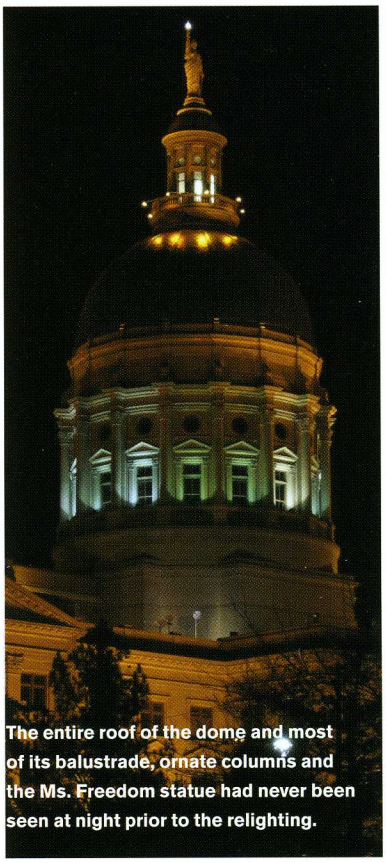
To help devise the complex mounting scheme, CD+M collaborated with Phoenix Products Co., Inc., supplier of the building's floodlighting system. Phoenix applications engineer Yazi Fletcher created computer models of the building to determine the best locations for long-throw spotlighting of the rotunda and to confirm illuminance levels on the dome's 360-deg girth.

Fletcher programmed a top view and an isometric view of the dome incorporating five illuminance colors—blue, purple, orange, red and green—and the percentage of each that would blend into a flattering composition. He then plotted the dome by dividing it into a pie chart, creating seven potential mounting locations (six were ultimately used) from surrounding positions and the mounting height required for each to provide a balance of illumination from all angles. A side view translated calculations into angles on the dome and the statue above.

'Everyone involved wanted to have the dome relit but nobody wanted to see the lights, themselves'

On the Capitol building itself, equipment by Hydrel Lighting and Forum accentuates the architectural forms. According to Cari, the contractor provided heavy mounting plates to avoid penetrating the roof's weatherproofing surface. Mounting brackets were modified by the manufacturers to fit the plates needed to secure the fixtures.

A combination of approximately a dozen each of GE's 1,000-W Multi-Vapor metal halide lamps and 1,000-W, 24,000-hour-rated Lucalox HPS lamps in narrow beam floodlights balance the color of the limestone and the dome's reflective gold contours. Hydrel furnished 40 narrow beam uplights, housing GE's 35-W and 70-W Constant Color CMH ceramic metal halide lamps. They are beamed to accent the dome's columns and intricate architectural moldings.



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Photos: Kieran Reynolds

Before the final specifications were issued for the project, members of the design team and a representative of the Georgia State Property Office, gathered on one of the adjacent rooftops to offer opinions on the final color temperature of the lamps on the rotundas. "It was late in the evening on a