

How to Reduce the Time and Cost of Implementing a Building Façade Lighting Scheme



Schuler Shook's lighting designers performed an in-depth study of building façade lighting for the City of Chicago. From our lighting design research, we offer the following recommendations to building owners considering lighting designs for their buildings.

This guide is intended to reduce the time and costs associated with implementing lighting schemes for building exteriors. The subjects covered include:

- lighting hardware and utilities,
- assembling the design/construction team,
- the design process, and
- methods for reducing lighting scheme costs.

I. Lighting Hardware and Utilities

A. Lighting fixtures and light sources

There are a great number of lighting fixture types and lamp types that can be used when lighting a facade. This provides building owners with a wider range of choices than ever before. Fixtures range from simple adjustable hoods to larger and more complex housings containing precision optical arrangements of reflectors and lenses.

The choice of fixture will depend upon many factors, including the amount of light output required, beam control, glare control, and space available. We recommend consultation with a professional lighting designer when assessing options. Lamp types include LED, fluorescent, and metal halide. Following, we summarize the characteristics of each lamp type.

Choosing Your Light Source:

LEDs

1. LEDs have become an indispensable tool for illuminating building facades. They are especially useful in a linear array when an unobtrusive fixture is required for a limited light throw application, though very long throw distances are also now possible with larger fixture housings. LEDs have the longest life of currently available white and colored light options, and are typically the most efficacious. A good lighting designer will take care to select the proper color temperature to match other light sources being used on your building. LEDs are also commonly used in red, blue, green, and sometimes amber, color combinations to provide easily programmable color changing effects.

Fluorescent Lamps

2. Fluorescent lamps can be useful to create broad, soft washes of light for limited throw distances. Extra planning and care is needed in cold weather climates where low-starting temperature ballasts should be utilized. Also, some fluorescent lamps are more sensitive to cold weather than others, and reduced light output can occur at very low temperatures. Fluorescent lamps may be most useful when budget is a primary concern.

Ceramic Metal Halide Lamps

3. Ceramic metal halide lamps are energy-efficient, have decent lamp lives, and are available in a wide range of wattages to handle short or long throw distances. They provide excellent color rendering and different color temperatures are available to render various building materials.

B. Electrical supply and Costs

Providing adequate power to the lighting fixtures is a major consideration. Many older buildings have electrical distribution systems that are already taxed by recent computer and communications technology. The proximity of existing power to the desired fixture location can affect the construction cost significantly, the cost increasing with distance. It is not unusual to find that, particularly in some older buildings, the cost of the lighting fixtures themselves is only a fraction of the actual cost of the new lighting installation.

C. Mounting requirements

Schuler Shook's lighting designers recommend mounting fixtures in locations that mask the fixture from view – particularly in the daytime – such as behind arches and railings and above cornices. Each building has architectural features that provide opportunities to conceal fixtures in locations that also provide good lighting angles. We also typically recommend that stainless steel hardware be used in all mountings to avoid rusting as the installation ages.

II. The Design and Construction Team

In addition to the building owner and manager, the following professionals should be involved in the design and installation of a facade lighting scheme:

Professional lighting designers are independent consultants who select the most appropriate equipment based on design parameters, budget, energy, and maintenance.



A. The lighting designer – assesses the building, discusses options with the owner and manager, and prepares plans for the lighting scheme. The designer can also produce a rendering of how the building will look at night with the new lighting. The lighting designer establishes budget estimates of equipment costs and discusses options, including phasing, to implement the designs. In addition, the lighting designer provides supervision of the electrical contractor regarding fixture location, mounting, aiming and focus. In some instances, the owner or manager may wish to initially retain the lighting designer only for a preliminary design study, which would include a rendering of the building with the new lighting and an equipment cost estimate. Professional lighting designers are independent consultants who select the most appropriate equipment based on design parameters, budget, energy, and maintenance. Most are members of the International Association of Lighting Designers (IALD).

B. The electrical contractor – determines the nearest power source(s), and engineers the lighting system. The contractor is responsible for obtaining and installing the specified lighting equipment within applicable codes. Under the direction of the lighting designer, the contractor also aims, focuses, and locks lighting fixtures in place.

III. The Design Process

Typically, the building lighting design process follows these steps:

- A.** Research original lighting schemes, if any existed on the building
- B.** Identify and document potential locations for lighting fixtures
- C.** Produce color rendering to illustrate conceptual lighting design ideas
- D.** Prepare preliminary lighting layout drawings, fixture schedules and catalog sheets
- E.** Conduct mockups of specific lighting effects to illustrate and evaluate lighting concepts

- F.** Review of materials by owner, manager, and lighting designer
- G.** Produce final lighting layout drawings, fixture schedules and specifications
- H.** Solicit bids from electrical contractors
- I.** Install design by electrical contractor, overseen by lighting designer
- J.** Focus and adjust all lighting fixtures

IV. Permitting Requirements

Installing exterior lighting on a building does not generally require the owner to go through the building permit process, but often a special electrical permit will be required. Each local jurisdiction should be consulted regarding permitting requirements. All electrical work must be completed by a licensed electrical contractor who should be familiar with the electrical permit process of a given locale. If the building has local or national landmark status, the process will include review by Landmarks Commission personnel.

V. Costs

There are several factors that contribute to the cost of lighting a building. The quantity and type of lighting fixtures is one factor. The costs associated with lighting equipment are readily available to the lighting designer during the design process. However, cost of installation is less predictable, and quite often the installation costs far exceed the equipment costs. There are a number of ways in which the cost of a building lighting program can be reduced. Following is Schuler Shook's list of suggested options for reducing costs.

A. Use staff electricians

Occasionally building owners opt to use in-house electricians to install lighting fixtures, wiring and any associated electrical equipment. This helps reduce costs by eliminating labor expenses associated with subcontracting the installation work.

B. Use cost-effective fixtures

A good lighting designer will take care to specify standard, high-quality fixtures that accomplish the design intent. In some cases, inexpensive fixtures will serve the same purpose as more expensive ones.

C. Use energy-efficient sources

Sources with high energy efficiency and long life should be used wherever possible, lowering operating and maintenance costs.

D. Coordinate with existing power locations

Wherever possible, place fixtures near existing power access locations. This will help to minimize installation costs.

E. Reestablish the original lighting concept

Some buildings have existing lighting fixtures – some of which may be original to the building's design – that have been neglected or not re-lamped. Refurbishing these fixtures should be strongly considered as part of the new lighting design.

F. Coordinate with facade construction projects

Whenever possible, the lighting of the building should be completed in conjunction with planned facade construction or cleaning projects.

G. Focus on a building's strengths

Special features of the building, appropriately distributed over the entire building, should be highlighted while others may be allowed to remain dark. This will require fewer fixtures than lighting the entire building.

H. Install lighting in phases

To help spread out construction costs over time, break down the project into phases. Most lighting projects can be completed in logical phases by lighting different elements of the building one at a time.

Following these recommendations, starting with assembling a good design and construction team, can save you time and money as you enhance your building façade with a new lighting design scheme.

