

CUSTOM LUMINAIRES

Custom luminaires can be problematic. Many fail in the prototype stage, finish over budget, arrive late and/or are poorly built. This can be avoided with careful advance planning. Below is a list of tips to help architects complete a successful custom luminaire.



Custom vertical basket indirect luminaire for the Ocean Liner MS Regal Empress stair tower landing built by Alexander Stephens and Sons of Glasgow. Photo by Peter Knego

A new or renovated space of significance often needs dedicated luminaires to advance the design theme. Historic preservation entails restoring existing luminaires—rewiring, new lampings, optics, and/or reproducing damaged or missing units. Think of difficult access and hostile environments such as weather, vibration and vandalism.

Modified standard of production luminaires is the usual path, often a special color, size or lamping/ballast. One customizes by checking options from the catalog. Onsite contractors usually build coves and soffits. Original new designs are where most trouble occurs.

Architects, interior and lighting designers are rarely trained in thinking

mass production, but instead space, form and structure. Problems arise when designing mass-produced products. By contrast, industrial designers and mechanical engineers who know manufacturing can lack the big picture of how a luminaire meshes into the entire lighting scheme.

The pencil sketch gives a false sense of security. Start from the inside out. Build rough physical models. Start with the internal components, build around them—then draw your model.

Understanding materials and designing for their inherent properties results in superior design rather than sketching a vapid, “nonmanufacturable” form. At worst are celebrity designers signing their name to decorative luminaires. Fashion designers often have little knowledge of other design fields. The craftsman and engineer have to clean up the mess.

Have no fear of plastics. Quality plastics usually work and are less fragile than glass. But plastic is ugly when it’s used to imitate wood, stone, marble or any material it isn’t: Like polyester clothing, it’s tacky. Plastics look good when designed for their inherent properties. Use for diffraction and diffusion of light where glass is impractical. Opaque plastic housings are graceful if designed with the right compound, finish and colors.

Glass doesn’t degrade. Its weight and fragility require special handling and shipping. Use glass for historical or significant installations where coming generations will view the luminaires. Avoid using glass in a chain hotel or retail establishment that gets periodic remodeling. The heat of halogen or HID luminaires may require glass.

Heat can be problematical with halogen, LED and HID sources and also kills electronics. A poorly

designed fluorescent luminaire can overheat. Regulatory labs have specifications for testing and thermal limits.

When a luminaire has many jiggers and doohickeys, a single-cast piece replaces them all. A two-page parts list spreadsheet is ideal.

Three-handed installation requires two bodies. Think about relamping without tools while standing on a ladder. Accelerated age and water testing should be implemented for new materials, sealing design or hostile climate.

Mounting convenience helps avoid back-charges from contractors since many don’t read instruction sheets. Wiring compartments of installed luminaires need easy inspection. Local regulations need compliance.

A picture is worth a thousand words; a 3D model is worth a thousand pictures. Most designers have advanced from antiquated drawing boards to 3D solid modeling. Products are three-dimensionally designed in a virtual fabrication shop. Drawings and parts list are derived from the model. The file has a 3D photo-realistic model that can be turned around in space, have components hidden or transparent, and have sections cut via mouse click. This easy-to-learn viewing software vividly communicates the design.

Don’t skimp on design/engineering fees. Setup for small runs can be longer than the production cycle. Per unit price and setup charge are inversely related.

Manufacturers coordinate delivery from different suppliers. A pilot production run should be implemented to work out unknown hazards in the prototype. Timing of regulatory testing can be at the agency’s mercy.

An original custom luminaire needs long lead times. Design from the inside out. See first if there is a standard luminaire or modified standard solution. **x**

BY DAVID RODSTEIN, IDSA, LC
Principal, Rodstein Design,
Haverford, Pa.