

A Specifying Engineer's Viewpoint on the Outdoor Lighting Design Process

Catherine Hollenshead, P.E., Lighting Assistant Dept. Leader with Estes, McClure & Associates, talks about the way outdoor lighting design has an impact on a space.



Picture this: a dark outdoor shopping area, a desolate store parking lot in the dead of night, a back alley engulfed in an opaque black. Do these descriptions feel like inviting or secure places to be? Probably not. Now picture these places with proper exterior lighting illuminating the space. Suddenly walking around the outdoor mall is a fun night activity, going into the store to grab those last-minute items seems harmless and taking the back-way home is feasible. Proper outdoor lighting design can change people's entire perception of a space. Done well, exterior lighting can instill a sense of security that can be artful at the same time! So, what exactly should you keep in mind when starting to begin an outdoor lighting design?

Before planning an exterior lighting design, you must know the light levels needed for a particular space. If you don't know what light levels are required, there are a few places you can start. First, NFPA 101 specifies light requirements for safe egress to a public way. Second, some jurisdictions have minimum and maximum light level requirements for building entrances, canopies, parking lots and at property lines. The IES Handbook also provides recommendations for exterior light levels and distribution uniformity. Finally, make sure to check with your own firm and/or clients, as they may have pre-established standards for exterior light levels.

The most exciting part of exterior lighting design is establishing what areas you want to highlight and then determining the different luminaires that you want to use. Is there a mood that you are trying to establish? Or is there a specific look that you are trying to achieve? Maybe you want to highlight the building architecture or landscaping features. Perhaps you want to add some visual excitement or flare by using RGBW lighting. Or create design continuity by replicating some of the interior lighting features

in exterior spaces. Personally, I find this to be the most exciting and creative part of the design process. In fact, you don't even need a working site plan at this point. Having this conversation early in the project design process can even allow you to make valuable suggestions that could influence future site layout and feature planning.

Now for the biggest challenge: striking the right balance. Not only do we need to provide lighting that instills a sense of security for site occupants, generally in an aesthetically pleasing way, but we also need to be good neighbors. I have found that light trespass can be the most challenging part of exterior lighting design. As I mentioned earlier, many jurisdictions set maximum light levels allowances at the property line. In order to meet these requirements, you will typically need to utilize different light distributions: house-side shields or visors. Some municipalities may even require full upright cutoff ("dark skies") to reduce or entirely eliminate skyglow. It is important to evaluate luminaire cut sheets and IES files in order to determine whether a luminaire meets this requirement. Most exterior luminaires have a BUG (Backlight, Uplight and Glare) rating, which can be an easy way to determine if a luminaire will meet upright specifications.

Once you have the layout for the exterior lighting, you can start working on the site control strategy. You may need to meet exterior lighting control codes that apply to your client's specific site location. With LED lighting and wireless control systems, we now have an abundance of control options that were not available with traditional sources. The days of simple on/off control are gone. Now we can easily provide dimming control based on whether a motion sensor detects movement, which reduces energy costs. With embedded wireless controls in luminaires, we also can group luminaires without being constrained to the circuit design. This allows our clients to make future changes within their lighting control system as their operation needs change.

While you must always be cognizant of code requirements, recommendations and client expectations, there is a lot of room for fun and creativity with exterior lighting design. Whether you want to make a bold statement with color-changing light, create a whimsical walkway path or provide basic lighting for improved security, there are more options available today than ever before!

Ms. Hollenshead obtained her B.S. in Electrical Engineering from the University of Texas at Tyler in 2004. She began her engineering career with EMA in 2004. Ms. Hollenshead is highly proficient in the use of AutoCAD, Revit, AGI32 and Microsoft Office. Some of her daily responsibilities include preparing complete electrical specifications, electrical power and lighting drawings, coordinating with architects, other engineering disciplines and utility providers, and educating the firm on innovative lighting trends. Ms. Hollenshead's unwavering passion for lighting, along with her extensive knowledge in electrical design has recently earned her the title of Lighting Specialist at EMA.



