MASTERING LANDSCAPE LIGHTING DESIGN

PART ONE OF TWO

A BOOK BY

CAST LIGHTING LLC

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SECTION 1

INTRODUCTION

At CAST Lighting, we are proud to offer landscape lighting solutions that are beautiful, durable and economical. We're honored to be viewed as one of the industry's top experts; as a thought leader., we're excited to educate others about the subtle and often overlooked details that make up superb landscape lighting design and innovation. Unfortunately, finding this information in an accurate, comprehensive, and easy-to-digest format can be difficult, which is why we are happy to offer our growing collection of eBooks.

Building off of our previous eBook, *"Landscape Lighting: An Illuminating Guide,"* our mission remains focused on educating contractors, distributors, and of course, homeowners. And with our latest release, *"Mastering Landscape Lighting Design: Part I,"* we examine everything from the fundamentals of light quality to advanced lighting techniques. This eBook is intended to set the foundation for the second eBook in this series, which closely explores industry challenges, CAST's unique solutions, and planning tips from the pros. We hope you find this two-part series enlightening. Happy reading!

SECTION 2

DEFINING LIGHT QUALITY

There is a stark, but not always obvious, difference between what one considers “good landscape lighting” versus what one considers “quality landscape lighting.” Good can be a nebulous term based on individual preferences, style, and opinions, while quality—as it pertains to landscape lighting—is defined by a host of factors that are consistent no matter the scenario. It is the relationship between this criteria and how specific lighting goals are achieved that defines lighting quality. These factors include lighting for human needs, economics, energy efficiency, environmental issues, as well as architectural and plant material considerations. The next time a homeowner asks why he or she should hire you to do the lighting, you will explain the true definition of lighting quality and how you can achieve it using this section as a guide.

> ...[THE] ENVIRONMENT SHOULD BE VISIBLE, SAFE, VISUALLY COMFORTABLE, AND AESTHETICALLY PLEASING...

HUMAN NEEDS

A lighting designer illuminates a landscape to serve the needs of the people who live, work, or visit the space. The lighting designer must create a glare-free illumination—of the right type—to enable people to perform needed tasks, and navigate the property without incident. Ultimately, this environment should be visible, safe, visually comfortable, and aesthetically pleasing as a result of installing quality landscape lighting. The light should also create the desired mood and atmosphere requested by the client in harmony with the property’s existing theme.

ENERGY EFFICIENCY & THE ENVIRONMENT

A lighting designer should select fixtures and components that are cost-effective, energy-efficient, and represent a minimal impact on the environment. A designer should also select long-lasting, durable products engineered to withstand the punishing outdoor elements.

Not only is low-voltage the smarter aesthetic choice for landscape lighting, it's more economical and easier to adjust in the field. Low-voltage lighting historically saves 60 to 90 percent of energy costs compared to traditional 120-volt lighting installation. Low-voltage lighting also boasts highly efficient toroidal transformers, wiring methods, and consumed wattage that conserve energy.

ARCHITECTURE

A lighting designer should be able to identity important architectural and landscape features, and create a design selectively highlighting and integrating these features into the overall lighting design. The designer should also expertly integrate landscape lighting into the existing landscape architecture by choosing fixtures that are visually appropriate for the surroundings while meeting all safety codes and standards.

PLANT MATERIALS

A lighting designer should incorporate plant material into the overall lighting design, and consider each plant's distinctive qualities, reflectance, texture, size, and maintenance. Using this information, the designer should plan for a lighting system that adjusts as the plants grow, ensuring the plant's aesthetic appeal within the overall design is maximized year after year.

SECTION 3

IDENTIFYING OBJECTIVES

The first objective of a lighting designer is to enable vision at night by illuminating a space. Beyond this is a list of other key objectives. In this section, we will identify these lighting objectives and provide a brief overview as to how each can be met.

USABILITY FOCUSES ON THE IDEA OF PROVIDING LIGHT FOR A TASK.

SAFETY

Low-voltage lighting is an ideal choice for illuminating walkways and entranceways to prevent injury. This ensures that residents and visitors can safely navigate through the property, avoiding otherwise unseen features or obstacles.

SECURITY

Security from theft, burglary, and trespassing is a primary concern for all homeowners, and is usually addressed with high-voltage floodlights. A better choice is strategically placed low-voltage lights that provide low levels of illumination distributed evenly throughout the property. This addresses and prevents any issues with glaring light and unlit regions known as “black holes” that allow intruders to hide.

USABILITY

Usability focuses on the idea of providing light for a task. In this instance, landscape lighting Illuminates both publicly seen and private areas of a property. This allows residents and guests to enjoy entertainment and recreational spaces like practice putting greens, docks, patios, decks, and other sitting or active areas such as sitting ponds, private gardens, meditation, and intimate spaces.

BEAUTY

Light defines textures, shapes, and structures, while evoking a wide range of positive emotional responses. Excellent lighting design can create moods that range from soft and subtle to dynamic and dramatic. It can highlight features of the structure and property, while maintaining a cohesive scene. Excellent lighting design not only reveals existing beauty, it creates another layer of beauty entirely. This often takes the shape of shadows on structures or the ground as well as silhouettes and scenes not encountered in the natural daylight setting. A designer is essentially creating art from darkness.

SECTION 4

APPLYING THE SEVEN LIGHTING PRINCIPLES

There are seven essential lighting principles all top-notch lighting designers incorporate to produce brilliant landscape lighting. In this section, we touch on each of these principles and how they are applied, and work together, to create exquisite nighttime scenes.

THE QUALITY OF LIGHTING AND THE MOOD IT SETS IS CHANGED BY TECHNIQUE...

#1 COHESION

Cohesion refers to the overall appearance of the scene as one continuous panorama. It is the lighting designer's mission to create this visual path. If there are unlit areas near illuminated ones, then the viewer's visual experience is interrupted. These black holes can be jarring, detract from the beauty of the design, and fatigue the eyes.

Cohesion is achieved by illuminating borders, background, and intermediate areas with the creative use of fixtures placed for that purpose.

#2 DEPTH

Depth refers to the strategic placement of fixtures using different light levels to achieve a three-dimensional scene. Depth requires lighting areas that are in the foreground, the middle, and in the back of the scene.

The proper use of high, medium, and low-LED Lumen fixtures—with varying beam spreads—helps establish depth by allowing the designer to create scenes that draw the eye from near to far.

#3 FOCAL POINTS

Keep in mind that the designer is not only painting a picture with lights, he or she is also directing a scene and establishing visual destinations. In this scene, the viewers' eyes are first drawn to one focal point then to the next and so on. These focal points may be unique features of the property like statuary or water features, or functional points like entranceways, sitting areas, or gathering places.

#4 PERSPECTIVE

Perspective refers to the viewers' experience from various locations, both outside and inside the home. The designer must walk the property and ensure that the lighting scene works from all possible vantage points starting with the outdoor gathering, dining, and seating areas, including the road approaching the home. Inside the home, the viewer should be able to look out the windows and enjoy the scene without being blinded from fixtures illuminating the house.

#5 BALANCE & SYMMETRY

A lighting designer's goal is to balance the lighting so that one side of the property is not

brighter than the other. The designer should always work to reveal the existing symmetry in the architecture and landscape, and seek to balance it from left to right, down to up. A skilled designer will also identify the features of a landscape that define it. If there are repeating patterns such as a row of bushes, fencing, or stone walls, then the designer needs to light those forms in a way that preserves symmetry.

#6 VISUAL COMFORT

The eye and the brain are connected by one of the most densely packed bundles of nerves in the body. Like all nerves, they are extremely sensitive to over-stimulation. Overly bright light from an unshielded filament causes real pain and disables vision momentarily.

Eye fatigue is another source of discomfort and can be muscular in origin. It can result from the extreme contrasts that result from total darkness to overly illuminated scenes.These extremes cause the eye muscles strain to focus and compensate for the insufficient light. A good lighting designer prevents these scenarios by avoiding direct glare, visible bulbs, and lighting the entire scene properly.

#7 QUALITY & DIRECTION

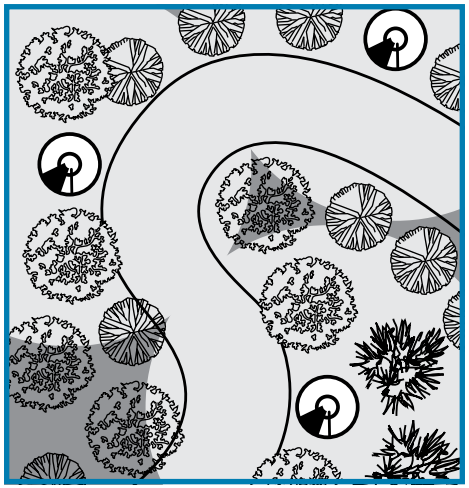
Low-voltage fixtures provide illumination that is highly controllable. Instead of the harsh glare of bare bulbs, light is directed to the desired places. In an exceptional lighting design, light sources are never seen, only the reflection of their light off a variety of surfaces are.

The quality of lighting and the mood it sets is changed by technique, which we will discuss at length in an upcoming section of this eBook. Generally speaking, uplighting creates more drama, downlighting creates a more natural feel, side lighting emphasizes details, while backlighting emphasizes form.

SECTION 5

UNDERSTANDING TECHNIQUE

BASIC TECHNIQUES



PATH/AREA LIGHTING

PURPOSE

To light planting beds and paths.

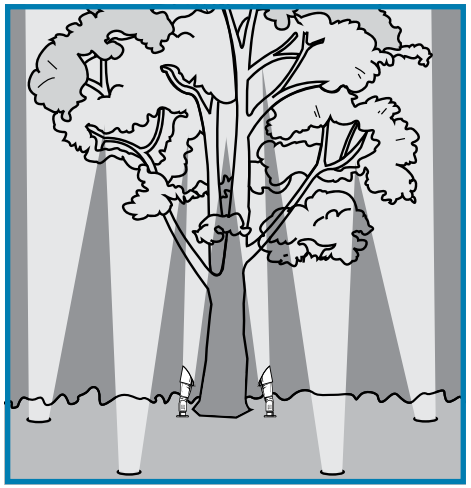
To provide seamless transition between lighting scenes.

FIXTURES USED

Path lights/Area Lights

RECOMMENDATIONS

Space and position fixtures to provide a visually appealing illumination along the path. Alternate placement from one side of the path to the other. Provide enough illumination to prevent tripping hazards, but space fixtures far enough apart to create distinct pools of light so your eye naturally moves through the space. Avoid runway lighting as this is not aesthetically pleasing and looks and feels unnatural when walking along a path.



UPLIGHTING

PURPOSE

To highlight trees, other plant materials, or architectural features.

Tends to be more dramatic than down lighting, but can also look natural when applied with skill.

FIXTURES USED

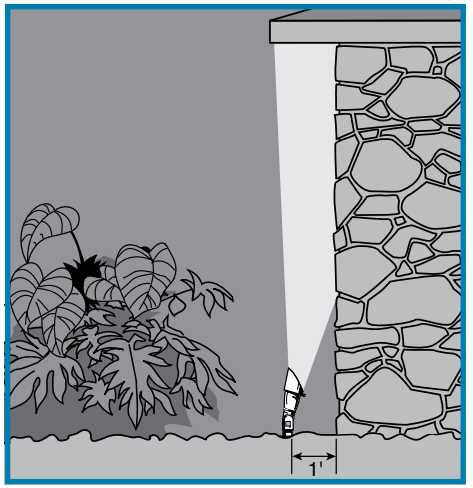
Directional lights

Well lights

RECOMMENDATIONS

For pine trees and other dense foliage plant material, place fixtures outside the drip line of the plant and limit spacing to 5 feet on center. Less dense trees usually require far fewer fixtures with 8 to 10-foot spacing.

For tree trunks, use low-intensity grazing technique to accentuate textures and connect the fixture to the ground.



GRAZING

PURPOSE

To provide a steeply angled light to accentuate texture on stone, stucco, and brick walls and tree trunks by utilizing the irregular surface to create broken shadows and irregular patterns.

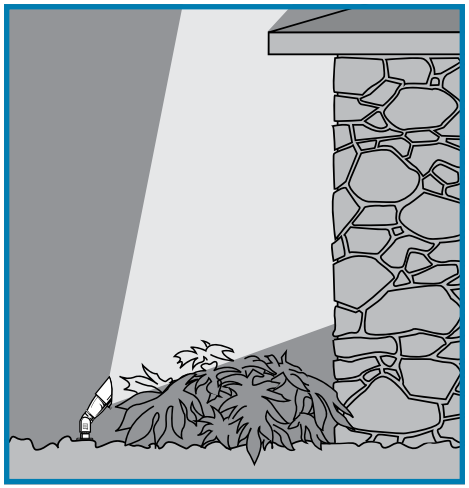
FIXTURES USED

Directional lights

Wall lights

RECOMMENDATIONS

Position fixtures within 1 foot of walls or tree trunks. Tilt fixture away from wall to minimize hot spot and provide a more even light distribution from top to bottom.



WALL WASHING

PURPOSE

To provide even illumination on low walls.

FIXTURES USED

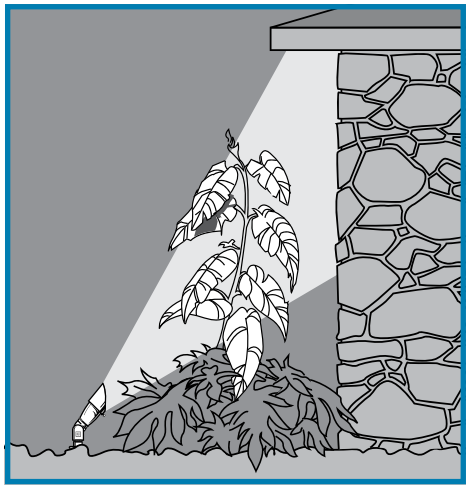
Wall wash lights

Spot/wall wash lights

RECOMMENDATIONS

Especially useful for entrances to gated communities and hotels.

Not particularly interesting for typical residential structures.



SHADOWING

PURPOSE

To create interesting shadows on walls.

FIXTURES USED

Directional lights

Well lights

RECOMMENDATIONS

Shadows create visual interest on the structure.

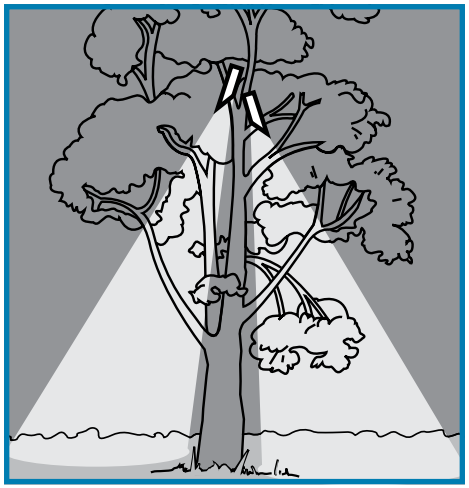
For houses with vinyl siding, use shadowing to break up the linear patterns.

When plant material is used to create shadows, the plants will need to be periodically trimmed, and fixtures may need to be relocated, to compensate for plant growth.

SECTION 6

UNDERSTANDING TECHNIQUE

ADVANCED TECHNIQUES



MOONLIGHTING

PURPOSE

To provide soft natural lighting over large areas; serves as an ideal transition connecting different lighting scenes together and eliminating black holes from the project.

FIXTURES USED

Tree lights

RECOMMENDATIONS

Fixtures must be at least 25 feet high (aimed 45 percent from horizontal.)

At least two lights per tree is recommended.

Fasten fixtures to tree with mounting canopy.

Do not screw canopy directly to tree surface; allow space behind canopy to prevent tree rot.

BACKLIGHTING

PURPOSE

To provide illumination around the edges of an object, thereby emphasizing its shape, and creating a nighttime mood.

FIXTURES USED

Directional lights

Well lights

RECOMMENDATIONS

This technique is best used on objects with interesting shapes.

Be sure that the fixture is hidden from view.

When two lights are used behind an object separated by a 120-degree angle, light wraps around the object to create this effect.

This technique works well with small conical shaped trees and large tree trunks.

SILHOUETTING

PURPOSE

To provide a lit surface that acts as a backdrop for unlit plant material or other features; the effect can be mysterious and compelling.

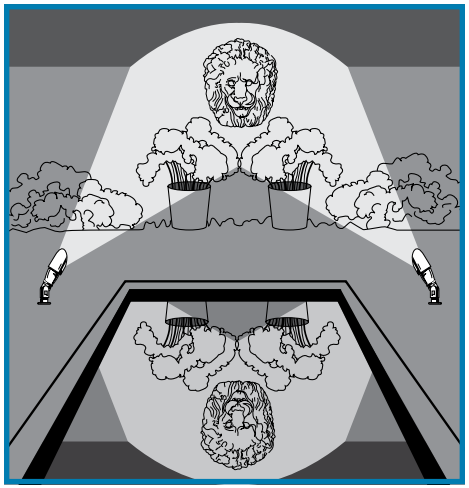
FIXTURES USED

Directional lights

Well lights

RECOMMENDATIONSV

This technique produces dramatic effects and is best used for objects and features that have distinctive and interesting shapes such as dense tropical plant material and statuary.



REFLECTIVE LIGHTING

PURPOSE

To provide general area illumination by reflecting off surfaces.

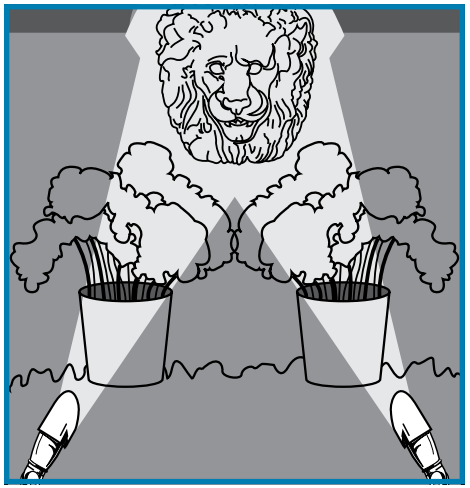
FIXTURES USED

Directional lights

Tree lights

RECOMMENDATIONS

Uplighting walls and trees cast a significant amount of low-level light onto surfaces.



CROSS LIGHTING

PURPOSE

To define surface texture and shape instead of a flattening effect created when using a single front light.

FIXTURES USED

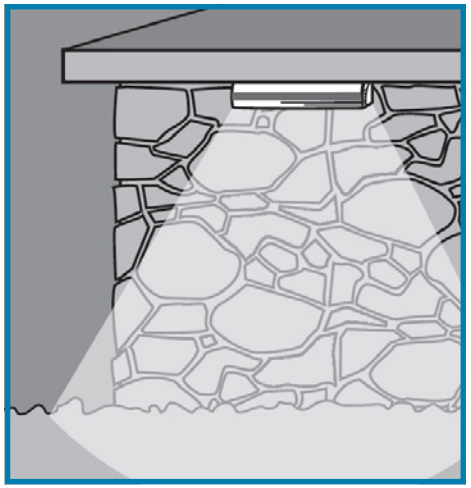
Directional lights

Well lights

RECOMMENDATIONS

Often used to define focal points.

Lumen and beam selection and fixture placement is critical.



WALL LIGHTING

PURPOSE

To illuminate retaining and freestanding walls and adjacent regions.

FIXTURES USED

Wall lights

Deck lights

RECOMMENDATIONS

Engineered wall lights are affixed with brackets that slip under capstones.

SECTION 7

CONCLUSION

In this eBook we've taught you the true definition of light quality, the key objectives for lighting, the seven principles of landscape lighting design, and expert tips on understanding basic and advanced techniques. We've set the foundation for you to gain the most out of *"Mastering Landscape Lighting Design: Part II."* In the second and final eBook of this series, we will explore the history of the landscape lighting industry, the challenges it's faced over time, our innovative solutions to this problems, and pro tips for planning your next landscape lighting design project. Stay tuned for this upcoming release!

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