A BOOK BY CAST LIGHTING

LANDSCAPE LIGHTING

AN ILLUMINATING GUIDE

TABLE OF CONTENTS

INTRODUCTION

At CAST Lighting, our clients depend on our landscape lighting solutions to endure the elements and withstand the test of time. As a premier manufacturer of low-voltage landscape lighting fixtures, transformers, wire, and other outdoor lighting system components, we have charged ourselves with continually innovating new technologies to better our products, results, and client satisfaction.

Both our clients and industry associates look to CAST Lighting as a thought leader, abreast of trends and innovations that will directly affect their budgets and needs. In this e-book, we will help you understand the true definition of quality landscape lighting; take an in-depth look at many key components that come together to make lighting work correctly, including fixtures, transformers, and LEDs; and share our new and inventive solutions to industry challenges.

In these pages, you will discover that true craftsmanship is the blending of art and engineering to create products so superior they actually outperform the competition on many levels.

SECTION 2

QUALITY

DEFINING QUALITY

WHAT IS LIGHTING QUALITY?

While the definition of “good” landscape lighting is largely subjective and can vary greatly from person to person, the definition of quality lighting will always remain the same. The following criteria are key factors in determining this:

- Human needs
- Economics
- Energy efficiency & durability
- Architectural consideration
- Plant material

HUMAN NEEDS

A lighting designer is charged with illuminating a landscape to serve the needs of the people who live in and visit the space. The lighting designer must create 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 lighting should also create the desired mood and atmosphere requested by the client, in harmony with the theme that exists on the property.

ENERGY EFFICIENCY & DURABILITY

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 environment.

ARCHITECTURE

A lighting designer should be able to identify 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 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. A designer should consider each plant's distinctive qualities, reflectance, texture, size, and maintenance, and plan for the lighting system to adjust as plants grow, ensuring the plant's aesthetic appeal in the overall design is maximized year after year.

A LESSON ON FIXTURES & PRICING

If you do a Google search for landscape lighting, you'll find lighting fixtures that cost less than a McDonalds' Happy Meal. However, just like food, price and brand are indicative of quality and value.

Cheap fixtures will always be bright and shiny when you purchase them, but after a few months, they will likely bend, break, chip, or stop working all together. You can spend a little more money for "premium" fixtures, but this might just buy you a full year rather than a few months.

LESSON LEARNED

Light fixtures should be considered an investment: Spend more initially to save money in the long run.

MISTAKES SOME PROFESSIONALS MAKE

EVEN THE PROS ARE SEDUCED BY LOW PRICE

You would think a landscape lighting professional would be smart enough to avoid throw-away lights. Sadly, many fail to realize that their reputation depends on the value they deliver.

When a professional designer uses cheap lights, it's not only bad for business, it does the homeowner a disservice.

They spend way too much time trying to save a few dollars on lights, instead of selecting a high-quality brand that will better their reputation. Many do this by selecting discount online retailers that offer nothing but low prices and mediocre quality.

They aren't suspicious when confronted by the oxymoron, "High Quality, Low Price," and ignore the age-old saying, "you get what you pay for."

Some professionals believe they can only succeed if they offer their service at the lowest possible price, beating out every competitor. They will use cheap materials, take shortcuts, and do anything to drive down price at the expense of the customer and their reputation.

They fail to see value in their work, their craftsmanship, their experience; and consequently, devalue their service to the point where they make little or no money on jobs, a vicious circle that forces them to compromise on the products they sell and the service they deliver.

These professionals fail to see that the success of their business depends on their reputations. If their businesses are associated with low quality lights, then their reputation reflects that, too.

MISTAKES SOME HOMEOWNERS MAKE

- They hire professionals who make the mistakes just discussed.
- They fail to recognize how a professionally designed lighting system beautifies their property, makes it safer, and enables them to enjoy their nighttime activities.
- They underestimate the skill, experience, and artistry required to produce an exceptional lighting design. When evaluating bids for landscape lighting, they focus too much on price, and not enough on other values like training, experience, product quality, and professionalism.
- They are offended when the landscape lighting professional refuses to budge on price.
- They spend way too much time in Home Depot browsing through the outdoor lighting section and try to do it themselves.

HOW TO DO IT RIGHT

HOMEOWNERS

Homeowners should research and locate a fully-trained, experienced landscape lighting professional who only uses the highest quality products. They should not try to do it themselves if they desire a lighting system that will perform for years down the line.

LANDSCAPE LIGHTING PROFESSIONALS

Landscape lighting professionals should select a high-quality brand and stick with it. They should also work on increasing the value of their businesses, build their reputations through excellent craftsmanship and products, and set prices that truly reflect those values.

THE CAST DIFFERENCE

WHAT WE OFFER

As you now know, landscape lighting is far more than just putting in a few lights haphazardly; it is a fine art that transforms your nighttime experience, and a well-designed and installed CAST landscape lighting system is an investment that rewards you every night for years to come.

CAST Lighting also manufacturers solid bronze outdoor lighting fixtures that carry a lifetime warranty, and offers low-voltage transformers, tin-coated marine-grade wire and other top-of-the-line lighting system components. To ensure that our products are installed correctly, we offer extensive training programs and certification.

Quality: A majority of outdoor lighting products have a tendency to break, chip, peel, and eventually fail entirely. CAST products have nearly indestructible construction, the highest quality electrical components, and are guaranteed to perform perfectly for the lifespan of your home.

Solid Sand-Cast Bronze: The bronze alloy ages gracefully with time and looks better year after year. Imported fixtures finishes tend to dull, chip, corrode and break over time. Bronze is better than aluminum, copper, or brass. CAST lighting fixtures are hand-crafted in our own foundry by highly trained and skilled technicians. The perfect choice, bronze never corrodes and ages naturally to a beautiful patina.

Training and Education: Like all artistic trades, landscape lighting design is best undertaken by seasoned professionals. CAST has led the industry in this training and offers both beginning and advanced educational courses, seminars, and online instruction.

Customer Service: A manufacturer plays an integral role in serving the needs of distributors, installers, specifiers, and homeowners. Answering questions, providing technical support and streamlining the purchasing process have always been our highest priorities. In fact, our outstanding communication has been recognized and lauded with receipt of the Constant Contact All-Star Award for consistent exceptional customer communication across all platforms.

Passion: Perhaps the most significant factor that sets us apart from competitors is our passion for quality landscape lighting fixtures and the art of landscape lighting design. Our company is staffed with incredibly skilled professionals who all share the same passion to make your property a magnificent interactive nighttime experience to be enjoyed with friends and family for years to come.

SECTION 3

LEDS

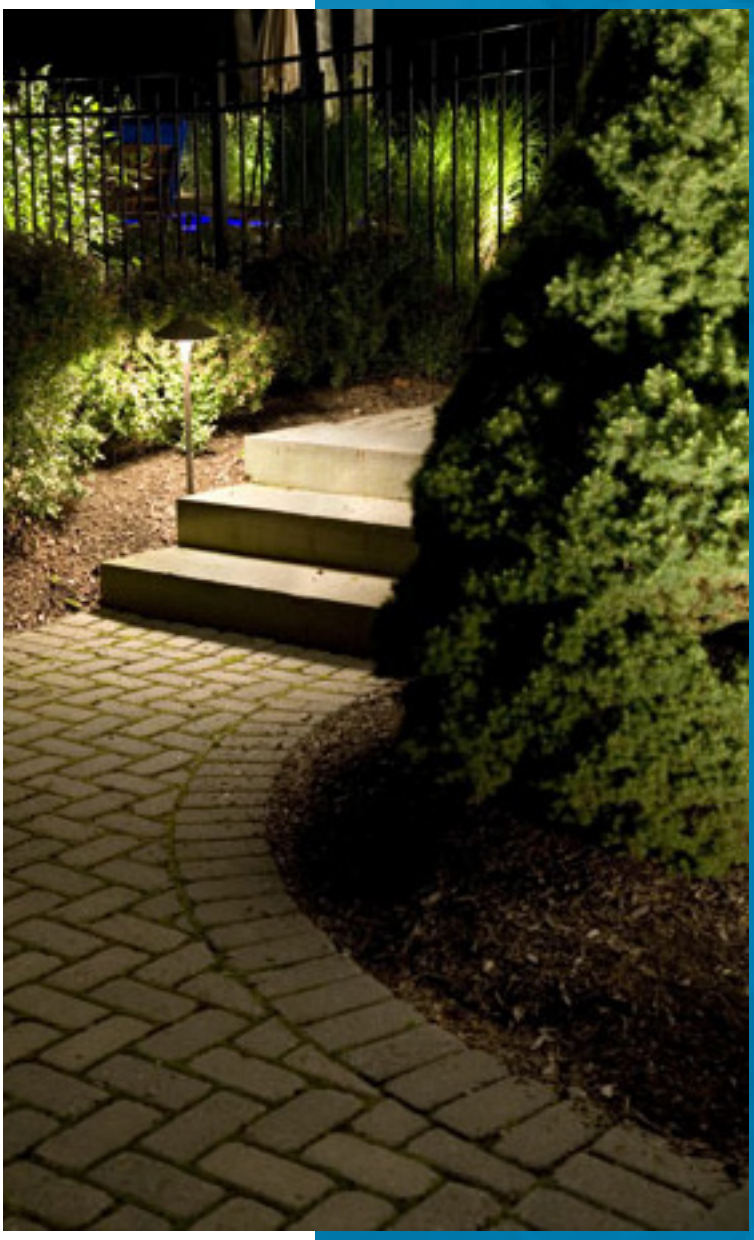
AN EXAMINATION OF LED LIGHTING

Before LEDs, selecting outdoor lights was fairly straightforward. You could assume that the bulbs were nearly identical: cheap lights took the same bulbs as the higher quality ones. All you had to do was select a light that looked sturdy, was made by a reputable manufacturer, and had a good warranty.

Now, fast-forward to present day with LEDs taking the stage. On the surface, they look great. They use about 1/3 the energy. They last up to 20 years. What could be better?

THE DARK SIDE OF LED LIGHTS

The reality of purchasing and using LEDs is not so rosy. The majority of these outdoor LEDs have failed to live up to their manufacturers' promises. In 2006, the U.S. Department of Energy launched the program, CALiPER, to test the overall performance of LED lights. The results were alarming; nearly every product failed to meet its claims. One LED manufacturer even faced a lawsuit because its products were so abysmal.



The LED faces issues with light, heat, moisture, color, and fixture body integrity—a lot of factors to consider. Let's not forget, LED circuits are sensitive bundles of electronics. Would you put your cell phone in a leaky box, plant it in your back yard, and expect it to last 20 years? It's not easy to manufacturer a sensitive piece of electronics that will survive the worst of Mother Nature.

That's why CAST Lighting spent four years developing its fully integrated LED landscape lights. These lights were designed from the ground up around the physics and thermal dynamics this new technology required. We hired some of the industry's best engineers to custom-design our LEDs to withstand the outdoor environment and perform optimally for up to 20 years.

Other companies use legacy halogen spot and path fixture housings and legacy lamp dimensions in order use new LED technology. However, we chose to design around these features to fully capture the benefits of these innovations.

7 REASONS FOR CHOOSING CAST LED LIGHTS

You might need a degree in semi-conductors to understand how we are revolutionizing the LED industry, but the following seven points will hopefully provide a simplified overview of our product's superiority.

1

WE STAY COOL

Heat is the No. 1 enemy of LED chips. They function well with a junction temperature up to about 80c, but above that, they start to fail. Further, enclosed legacy halogen fixtures act like ovens, and since air is the worst heat conductor the LEDs have no way of dissipating the heat they generate. Even short periods of overheating can diminish light output, cause color shift, and reduce LED life by 50 percent.

CAST LEDs transfer and manage LED heat using solid bronze bodies, which are massive and effective heat sinks that pull heat away from LEDs to protect them from overheating.

2

WE STAY DRY

Water is the No. 1 enemy of electronics. Water won't just short-circuit electronics, it leads to corrosion that eats away the entire assembly.

CAST LEDs are shielded from water intrusion through multiple methods. All CAST LED components use conformal coatings or epoxy potting for protection. Additional security is provided with compression fittings, sealed glass lenses, and high-temp silicone gaskets.

3

WE STAY SOLID

CAST LEDs are the only fixtures designed to last longer than the actual LEDs. Aluminum, copper, and brass fixtures may claim long warranties, but these metals corrode, bend, and break long before a quality LED fails, and fixture breakage is not covered by a warranty. We stand by our statement that CAST bronze fixtures are the only ones that will never end up in a landfill.

4

WE RANGE FAR AND WIDE

CAST LEDs have a wide voltage range—10 to 24V—and are protected from spikes and surges. Most other LED fixtures have narrower ranges and may not perform well throughout this range. A wide voltage range gives installers ample flexibility and allows them to connect many more fixtures on a single wire.

The protection from voltage spikes and surges is especially important since such events are more common than you would think. A single spike can take out every LED in your yard unless your LEDs are protected.

5

WE ARE GREAT DRIVERS

The driver is the circuitry that supplies and conditions power to the LED chip. The driver design is what separates the men from the boys in the LED world. A poorly

designed driver with cheap components can greatly reduce the life of an LED. One common component, the electrolytic capacitor, is very susceptible to heat damage, and often leads to failure. Nearly all LED fixture manufacturers use them. CAST does not. Some manufactures even use components that have a shorter lifespan than the actual LED does.

CAST LEDs offers the highest quality driver components rated for extreme conditions and are designed to last longer than the LED.

6

OUR COLORS ARE RIGHT

CAST LEDs have tight control over color temperature and color rendering to match incandescent across our entire product line. This means every CAST LED produces the same color temperature. Since the human eye can detect a 3 percent variation in color this is extremely important. Everything needs to look the same across the entire project. Lower quality LED can vary from batch to batch, fixture to fixture producing an uneven color scheme noticeable from plant to plant. Most so-called “warm white” LEDs have color temps that range between 2,800K and 3,000K, which are noticeably cooler than incandescents.

All CAST LED’s are rated at 2,800K +/-, indistinguishable from halogen lights.

Another common color problem among cheap LEDs is lasting performance: A phosphor layer coats the LED chip, this layer transforms the blue light coming from the LED into a mixture of colors that combine to make warm white light. This phosphor layer is heat-sensitive and deteriorates in time when overheated. That’s why cheap LEDs may initially have a nice white light, but will gradually become bluer.

CAST does two things to prevent deterioration: We only use the highest quality Cree chips that have superior phosphor coatings, and we effectively pull heat away from the chip so it never overheats.

7

WE WILL NEVER BE DISCARDED

CAST has the only LED fixtures that will last longer than the LEDs themselves. (We said that earlier, but we feel it bears repeating!) Despite long warranty claims of other manufacturers, CAST offers the only fixture that will truly last a lifetime. Even if the LED modules are damaged due to lightning, most are replaceable. Our fixtures will never be thrown away.

SECTION 4

DESIGN

CAST LIGHTING LOW-VOLTAGE TRANSFORMERS

RE-ENGINEERED FOR GREATER RELIABILITY

Low-voltage transformers are at the heart of every landscape lighting installation. Their job is fairly simple: to convert 120 volts to the voltage required to power a 12-volt lighting system. Not so simple, however, is the engineering that goes behind the construction of these power supplies.

CAST Lighting produces transformers that range in capacity from 75 watts to 1,200 watts—the largest in the industry—with outputs ranging from 12 volts to 24 volts. Spanning the last ten years, CAST engineers have modified the components and design of these transformers to drastically improve their functionality and reliability.

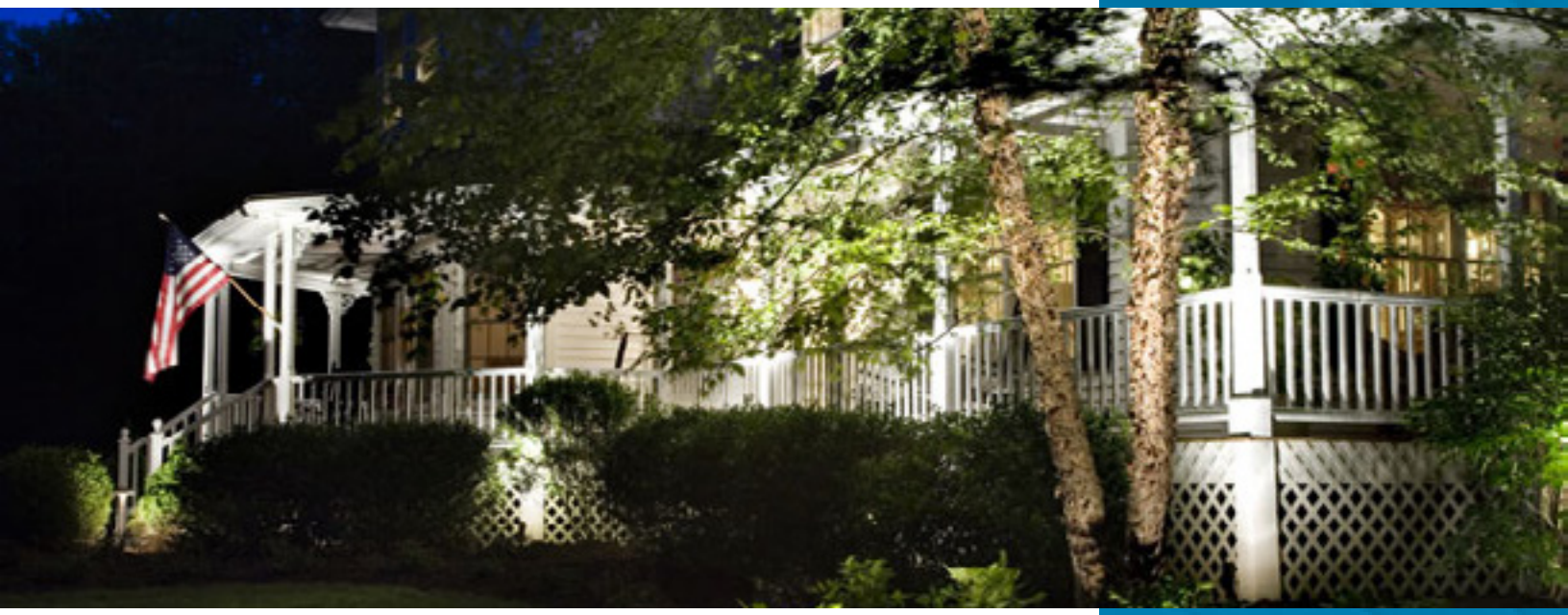
RUGGED AND RELIABLE INNOVATION

The larger transformers—900 watts and above—presented the greatest engineering challenges. These transformers carry a high current load that stress the unit's electronic components. Additional stresses are applied due to the occasional presence of "inrush current," a powerful surge that floods the unit upon start-up. With our new modifications, CAST is confident that our transformers are now the most rugged and reliable in the industry.

CAST LIGHTING TRANSFORMER FEATURES

- Industry-leading, highly-efficient resin-sealed toroidal cores
- Double inrush protection *(on models 900 watts and above)*, using two simple and robust thermistors
- Extra-rugged power bypass relays that protect sensitive time clocks and photocells
- Extra-large terminal blocks and wiring compartment
- "Full-Load Commons Configuration" that enables full use of transformer capacity *(Master Series only)*
- PVC wire conduit *(Master Series only)*

HOUSE-ILLUMINATING FIXTURES



WHICH FIXTURES ARE BEST USED TO ILLUMINATE THE FRONT OF A HOUSE?

We recommend CAST Craftsman Series LED spotlights (CCSL18336B), the classic series (CBLED141) or the feature packed Impressionist series (CID140), the most commonly used fixtures for illuminating vertical surfaces.

CAST Craftsman Ground Lights (CCGL18336B) also work great for this application. The New CAST Craftsman Series Ground Light can also be used for this purpose. This new patent-pending design can be used as a stand-alone uplight or retrofit any existing PAR 36 Halogen Well Light. It is a fully integrated LED with a solid sand cast bronze housing, and defines “CAST Quality.”This new fixture provides easy installation stainless steel pins that can be pushed directly into the ground and allows for quick adjustments as plant material grows over time.

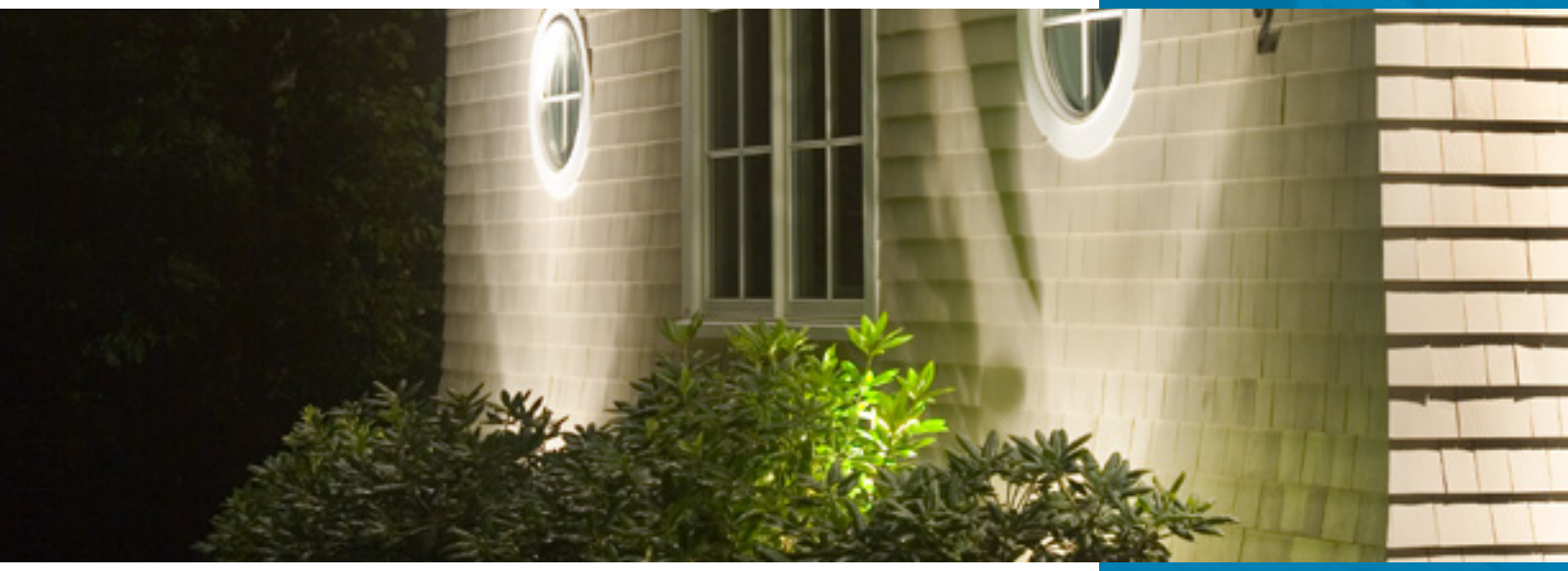
DRIVEWAY LIGHTING TECHNIQUES

WHAT TECHNIQUES ARE USED TO ILLUMINATE DRIVEWAYS?

The most compelling lighting for a driveway is moonlighting, which is designed to imitate the moon's natural glow. This involves mounting CAST Tree Lights 20 to 30 feet into trees so that light spills onto a driveway like a full moon is overhead.

Driveways may also be illuminated along the edges with CAST path lights or the CAST Area Bullet, which create a lovely and radiant effect.

SET-IN-STONE WALL LIGHTS



THE DILEMMA

Stone or block walls are distinctive features found in nearly every well-designed landscape. Installing lights in these walls is a wonderful way to illuminate their beauty as well as the adjacent pathways and garden beds. For these reasons, many under-capstone lighting fixtures are installed on properties.

One of the biggest challenges facing wall light installers, however, is that once a light is mortared under the capstone, it is nearly impossible to remove. The same holds true for wires that run through the walls. Yet another problem is that wall lights must be installed during the wall construction phase, a messy process which is often a logistical nightmare to contractors.

THE SOLUTION: CAST LIGHTING SET-IN-STONE® WALL LIGHT INSTALLATION SYSTEM

The CAST Engineered Wall Light, both incandescent and LED versions, has become a light-of-choice because of its durability—hand-crafted in solid bronze— and its unmatched sustained performance. While this wall light clearly demonstrates superiority in the market, we wanted to innovate further.

Because mortared, stacked stone, wet laid, and now engineered walls are expensive to install and even tougher to take apart we produced a simple system to address the many wall light issues that inevitably arise. CAST Lighting is introducing its latest patented invention designed to simplify the planning, installation, and maintenance of wall lights.

The CAST Set-in-Stone® Wall Light Installation System includes two components that are installed during wall construction to provide fixture mounting locations and wiring conduit. This allows the lighting installation to occur after the wall has been completed and maintained anytime in the future without disturbing the wall structure.

HOW IT WORKS

The modular system is a rapid method that is easy to implement. It can be used for any wall light installation including use between blocks and in solid walls. The most common application, though, is under capstones or in the face of the wall. Let's go through the steps for installation:

- **Prepare the wall.** During construction these mounting modules are placed in the face of the wall or directly under the capstone. With the wall completely assembled except for the capstone, a cavity is cut into the block or stacked stone.
- **Put wall light mounting modules in place.** At each fixture location, a module is placed, holding it in place with a brick, if loose and going under the capstone.
- **Attach Flexible Conduit.** Modules are connected with Flexible Conduit, which is run from the first module to exit the wall.
- **Run wires through Flexible Conduit.** Wires are run into and out of modules, and to exit the wall connected.
- **Seal modules.** Each module has a Mylar flap that is opened to run wires, and then closed to prevent mortar intrusion.
- **Connect and insert wall lights.** After the capstone has been mortared in place, a module wiring compartment is opened, fixture wires are connected to the power wires, and then a bracket is inserted into module sleeve. The wall light—and its wiring—may be removed at any time for servicing or replacement. This sure beats having to break apart a wall or capstone if the lights ever need servicing.

SECTION 5

MAINTENANCE

WHAT SORT OF MAINTENANCE IS REQUIRED FOR CAST FIXTURES?

At least once a year, the following maintenance should be performed on CAST fixtures:

- Fixture surfaces are wiped clean of dirt and debris
- Lens are cleaned with a CLR solution
- Plant material and debris that may be contacting or covering the fixture should be trimmed back or removed

WHAT SORT OF MAINTENANCE IS REQUIRED FOR CAST TRANSFORMERS?

At least once every 18 months, the following maintenance should be performed on CAST transformers:

- Surface and under cover are cleaned of dirt and debris
- Terminal block set screws (top and bottom) are tightened securely
- Testing loop is amped and compared to record form to ensure transformer load is still within limits

Interested in CAST Lights for Your Home?

VISIT

CAST-LIGHTING.COM

CAST LIGHTING LLC