HOME&REAL ESTATE

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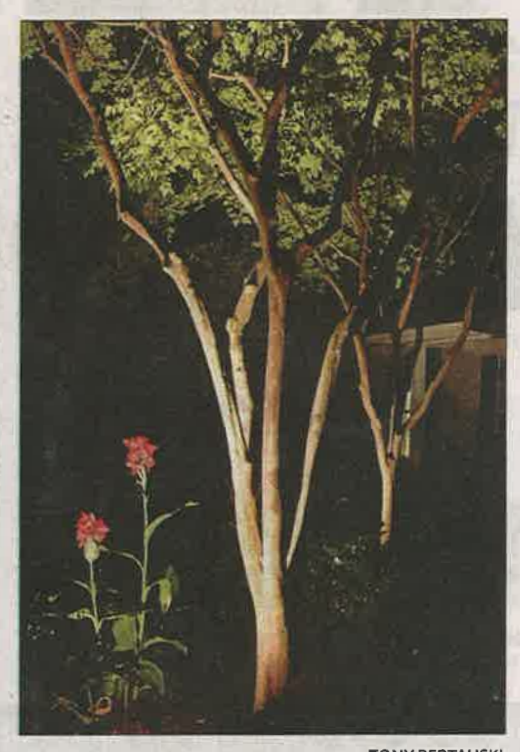
CAROLINA LANDSCAPE LIGHTING

Uplighting garden features such as fountains and urns makes them stand out dramatically.



TONY BERTAUSKI

Uplighting transforms the entry walk at night.

Light up the night

Landscape fixtures can add value, security to home

CAROLINA LANDSCAPE LIGHTING

Lighting up doors and windows bolsters protection against potential intruders.

Some of the best gifts are the overlooked inexpensive ones.

My recent favorite is a head lamp. If you read my columns, you'll know we had rodents move into the attic. I spent much of December checking traps.

With a flashlight in one hand and a bucket in the other, it's just short of dangerous. Without light, crawling through a jungle gym of rafters would be impossible.

Your landscape may be missing the valuable element of light that would contribute to the aesthetic value as well as the security.

TONY BERTAUSKI

They often come with a short stake to uplight trees, walls or other objects.

According to the Dark Skies Initiative, up-lighting with low-voltage landscape lights does

age is a function of voltage and current, often referred to as power. For instance, a 9-watt fluorescent bulb puts out the same amount of light (lumens) as a 40-watt incandescent bulb because the fluorescent bulb is more energy efficient, using fewer watts to produce the same amount of light.

Transformers

Landscape lights operate on 12 volts, which is safe to handle. Household outlets are 120-volts, so a landscape light cannot simply be plugged into the wall. A transformer is plugged into the

ROBERT BEHRE/STAFF

Above the portico's first floor, five tie rods were added to keep the portico from pulling out from the house, as it began to do when the concrete beams began to fail.

Drayton Hall's portico

Shoring up took delicate touch

For almost half a century, the curators of Drayton Hall, one of America's most architecturally significant early homes, have tried to conserve all of the building's surviving historic fabric, even the relatively new stuff.

Peeling interior paint has been carefully readhered to the walls. A new computer weather program was bought to advise when to open and close windows and doors to protect the interior from humidity swings. Spare stone columns were left on their side on the basement floor.

ROBERT BEHRE
Architecture & Preservation

After all, Drayton Hall, owned by the National Trust for Historic Preservation and now run by a local trust, was not only one of this country's first Georgian Palladian homes, its post-1970 life as a museum was conceived to make it a leading example of how preservation should be carried out.

But the most recent work on its portico has marked a change in its preservation philosophy, one that brought its own drama.

While Drayton Hall was extremely well constructed, it was not without its flaws, particularly under its iconic portico, which both recesses into the house's front facade and projects out from it, a feature that leaves it vulnerable to heavy rains.

The house was finished in the 1750s, and its portico might have rotted out a few times before the Drayton family took a seemingly drastic step in the early 20th century to install concrete beams to hold up the portico's first floor.

The problem is that concrete, while seemingly so solid, has a finite life, says structural engineer Craig Bennett, who worked on the project.

Over time, concrete carbonates, and its changing acidity reduces its protection against steel reinforcing bars inside. As the rebar corrodes, it destroys the concrete, and the cracking and spalling in turn allow in more moisture, which creates more corrosion. Its usual lifespan is about 75 years, and based in part on a Nabisco cookie wrapper found in it, its time was about up.

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Shoring up Drayton Hall's portico

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"In this case, as the concrete corroded, it also was destroying the 1740s brick masonry arches" in the basement, Bennett says. "When you have 1920 concrete doing serious structural damage to 1740s brick, I think most of us agreed that the 1740s brick should win."

Still, the Drayton Hall Preservation Trust didn't act rashly.

It began considering options to address the failing portico five years ago, not only for its preservation but also visitor safety.

Trish Smith, the trust's Curator of Historic Architectural Resources, says the trust and its team considered using steel, concrete and even fiberglass to replace the concrete beams and hold up the massive portico.

It settled on a timber framing system, believed similar to the house's original design but with several improvements, largely unseen.

Drayton Hall's new director called the work "a little more dramatic than anything we've done before."

Underneath the portico's checkerboard stones, there is a virtual club sandwich of waterproofing elements, including lead flashing, a layer of mortar, a plastic drainage mat, more mortar, a plastic ice and water shield, and only then the thin boards that rest on the new supporting timbers.

There are copper drains in the basement and weep holes drilled into the steps.

Meanwhile, the design also used the original brick pockets for the 19 timber joists, though the pockets were lined with copper to protect the timbers from moisture. And the timbers were placed on rubber pads to allow any water to run off inside those copper pockets. Smith says the team decided to bolt the timbers together instead of using a traditional mortise and tenon system so they would be easier to replace when one starts to rot.

This all might sound pretty straightforward, but the contractor still had to figure out how to remove the concrete beams from under the stone columns, each of which supported about 10 tons of house.

PHOTOGRAPHS BY ROBERT BEHRE/STAFF

The new timber joists in Drayton Hall's basement were designed with a header to minimize weight installed over the basement's brick arches.

Small weep holes were drilled in the portico's step at Drayton Hall as yet another strategy to keep its timber support system dry.

"One of the real big challenges was in taking the concrete out from under the columns without putting the building at very serious risk of loss of the structure," Bennett says.

So the work, and the biggest drama, involved lifting each of the center two columns just enough to ensure they no longer rested on the concrete, but not so much as to cause other cracking. Bennett says both were lifted, one lifted up 500 micrometers, or about the thickness of five sheets of copier paper. The other was lifted 200 micrometers. The half-million-dollar project is near an end, to everyone's relief.

"We've done everything we could to make this timber system last longer than the original timber systems," Bennett says.

"We know it's going to get wet," Smith adds. "That is what has plagued the structure from the beginning."

It's actually what plagues most of Charleston's historic structures, and that's one reason why preservation, a sort of fancy term for maintenance, is such a big deal here. And it continues to be a source of pride, as will be discovered decades from now when future preservationists work on one of Drayton Hall's basement timber headers.

"Everyone who worked on this project signed their names on the top," Smith says.

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