Light up the night

Landscape fixtures can add value, security to home

For almost half a century, the curators of Drayton Hall, one of America's most architecturally significant early houses, have tried to conserve all of its building's 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.

Stone columns were left on their side on the basement floor. After all, Drayton Hall's portico was a rebuke to the grand orders of classical architecture. And it was a stand for回来了 when Tie rods were added to keep the portico from pulling out of the house, as it began to do when the concrete beams began to fail.
Lighting up doors and windows bolsters protection against potential intruders.

S
ome of the best gifts are the overlooked inexpensive ones.

My recent favorite is a head lamp. If you have a column, you’ll know we had rods in 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 rods 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.

Low-voltage lighting is frequently overlooked and not expensive.

Fixtures
Pathspread lights are short fixtures to illuminate pathways. Avoid the temptation to use too many lights. Dark areas will accentuate lighting effects.

For example, place path lights a minimum of 10 feet apart.

Directional fixtures are similar to spotlights.

Tony Beriauski

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

According to the Dark Sky Initiative, uplighting with low-voltage landscape lighting does not contribute to light pollution.

Directional fixtures such as those on the perimeter may be used to outline and illuminate a path. Wedge can be stapled on tree branches, but they have to be bonded annually to avoid overgrowth. Fast growing trees, such as grape vines, can swallow a wire in less than a year.

Power
Voltage is electrical potential. Amperage or current in the speed electricity moves. Watts are a function of voltage and amperage, often referred to as power. For instance, a 5-watt fluorescent bulb puts out the same amount of light (lumens) as a 60-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 outlet and steps the voltage down to approximately 12 volts.

How many watts a transformer puts out, or its wattage capacity, varies on the model. Larger wattage capacity transformers cost more.

To determine the correct transformer size, add the wattage of all the lights to the system. For instance, if you plan to have five 20-watt fixtures, you will need a total of 100 watts. A Please see Beriauski, Page D4

If you go
WHAT: Trish Smith of Drayton Hall will give a presentation on the portico project.

WHERE: A reception will start at 5:30 p.m., followed by her presentation at 6:45 p.m. Feb. 18.

WEST: South Carolina Society Hall, 72 Meeting St., Charleston.

MORE INFO: 843-726-8372

Above the portico’s first floor, five tie rods were added to keep the portico from pulling out from the house, as it had done 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 weathered to the wall. A new computer-weather program was bought to advise which to open and close window and doors to protect the interior from humidity swings.

Some more columns were left on their side on the basement floor.

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 portico, 1747, was designed to be dismantled and reassembled 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 1760s, and its portico might have remained in place for 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 was that concrete, while seemingly solid, has a finite life, says structural engineer Craig Bennett, who worked on the project.

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

Please see BERE, Page D5

Light up the night
Landscape fixtures can add value, security to home
Shoring up Drayton Hall's portico

BEHNK from Page D3

"In this case, as the concrete corroded, it also was destroying the 1960s brick masonry arches" in the basement, Bennett says. "When you have 1920 concrete doing serious structural damage to 1740 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, she said, 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 bands 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.

Bennett says the team decided to bolt the timbers together instead of using a traditional mortar and lemma system so they could be easier to replace when one starts to rot.

This might seem 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.

"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 dramas, 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 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 nearly 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 look at one of Drayton Hall's basement timber headers.

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

Reach Robert Behre at 937-5771 or at twitter.com/RobertBehre.