Signtex Inc LIGHTING

Credit: Paul G. Wiegman

Case Study:

Phipps Conservatory and Botanical Gardens Exhibit Staging Center

www.signtexinc.com

Details

Project: Phipps Conservatory and Botanical Gardens Exhibit Staging Center

Location: Pittsburgh, Pennsylvania

Year of Completion: 2019

Architect: FortyEighty Architecture

Electrical Engineer: Iams Consulting, LLC

Lighting Specifier: Hanlon Electric

Size of Building: 10,670 square feet

Approx. Area of Emergency Lighting: 9,625 square feed

Emergency Lighting System: Central Battery System

Background

At Signtex Inc., protecting and improving the environment is at our core. Many of our patented products were designed to decrease battery usage, which ultimately has devastating effects on the environment. Working on the Phipps Conservatory and Botanical Gardens Exhibit Staging Center (ESC) was an honor.

Formerly an old public works site (image below), Phipps Conservatory and Botanical Gardens' ESC is continuing to lead the charge in innovative sustainable building design and construction. This project showcases the latest advancements in green building technology, transforming a dilapidated space on a former brownfield site into a safe, healthy environment for people, plants and animals.

"We turned an old and ugly building into one of the greenest buildings in the world," says Phipps president and CEO Richard Piacentini. "We'll never have a heating bill, an electric bill, a cooling bill, or a sewer bill for this building. That's

Credit: Hawkeye Aerial Photography

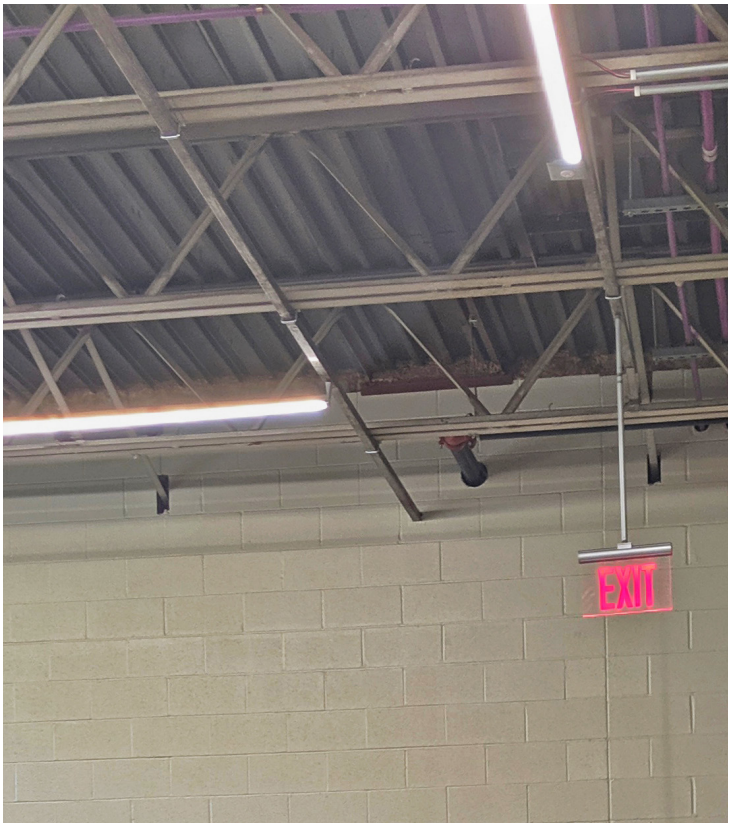
pretty substantial, but there are a lot of intangible benefits. The health and happiness of the people who work here, that's a real plus. It's kind of hard to put a number on that, but it's certainly something that's extremely important." (Next Pittsburgh)

Signtex Solution

Signtex was proud to be offered an opportunity to propose a complete emergency lighting system for this unique, high-efficiency adaptive reuse building project on the Phipps Conservatory Campus, built to meet the standards of the International Living Future Institute's Living Building Challenge. This project minimizes reliance on the national power grid, through the use of advanced Photo-Voltaic (PV) power supplies for many systems in the building, including all LED lighting. Power from the PV system is supplied to battery banks, thence to DC-DC power supplies with output at 24 VDC for normal lighting throughout the building.

To ensure compliance with national and local building codes, as well as UL Standard 924 for emergency systems, power to maintain emergency batteries is required to be independent of a PV supply, hence our central battery panels are connected to the grid at 120 VAC. Standby power to maintain the central batteries and operate exit signs is less than 5W per panel. Only three panels are required for all emergency lighting, resulting in less than 15W continuous load from the grid.

Our central battery system, with emergency power also at 24VDC to operate a variety of emergency lighting fixtures was a perfect match for the DC branch circuit wiring specified throughout the building. Signtex supplied several models from the MOONLITE LED® series as well as edge-lit



Credit: Rob Larson Photography

exits from the Series CRS line. These low-profile emergency luminaires blend well with the DC normal lighting fixtures.

In addition to the engineering challenge, accelerated delivery was requested to ensure meeting an important date for the Grand Opening of the building. Working closely with contractors Hanlon Electric Company, Signtex rushed specification cuts, including the Living Building Challenge requirements for approval, followed by expedited shipping of all material. Installation, testing and final electrical inspection were completed on time, with no faults found in any of the components. Nearly two years since activation, we have been advised this specialized emergency lighting system continues to operate flawlessly.

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The DC Difference

Direct current (DC) electricity is the form of electricity collected by solar panels and stored by their batteries, but most American buildings use alternating current (AC). In conventional settings, a device called a solar inverter converts the DC electricity from solar panels into AC, wasting 10 – 15% of solar energy in the process of converting to AC and then back to DC again to power LED light bulbs. The ESC DC power distribution system for normal and emergency lighting breaks this wasteful convention by using direct DC from the solar panels and batteries to all of the lights in the building directly. That means the entire lighting system for this building is able to run on a single 20-amp circuit. (Phipps)

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Signtex Products Used

Central Battery System
CBL

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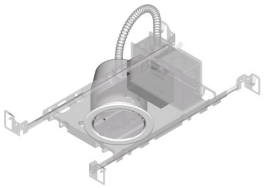
Moonlite LED™
Series MLS - Surface Mount Down Light

Learn More

Moonlite LED™
Series MOE - Die Cast Wall Pack

Learn More



Moonlite LED™
Series MRD - Recessed Down Light for Remodel Work

Learn More

Exit Signs

Learn More

Sources

https://www.phipps.conservatory.org/green-innovation/at-phipps/exhibit-staging-center/

https://nextpittsburgh.com/from-our-sponsors/phipps-turned-an-ugly-old-building-into-the-exhibit-staging-center-one-of-the-greenest-in-the-world/