

DISTRICT DEPARTMENT of TRANSPORTATION

# CAR BARN TRAINING CENTER

**CATEGORY** Architecture  
**COMPLETION** July 2017  
**LOCATION** Washington, DC  
**SIZE** 30,000 SF



# OVERVIEW

**Under different circumstances, DC’s new streetcar operations, maintenance, and storage facility might have followed the precedent set by similar transportation structures across the country: drab, industrial, energy-hog buildings designed for machines, not people. By leveraging opportunity in perceived constraints—a historically-designated site, rigorous agency reviews, and a complex client structure with participation from various city departments—the project team succeeded in delivering a facility that challenges modern attitudes towards transportation infrastructure. The new 30,000 SF Car Barn Training Center is a contemporary civic building that celebrates and showcases DC’s investment in public transportation, is a good neighbor to an adjacent educational campus, creates a healthy workplace, and demonstrates sustainable design strategies.**

## RETURN TO A CIVIC APPROACH

Through its architecture and urban design, the Car Barn Training Center represents a return to the car barns of the early twentieth century and to the idea that transportation facilities should play a role in defining and enhancing the public realm. In the first half of the twentieth century, DC had a robust streetcar network with more than 200 miles of track, and the streetcar facilities from that era were all grand civic structures that contributed to the public realm despite their light industrial purpose. Today, the new DC streetcar system links neighborhoods with a modern and convenient transportation alternative, increasing transit options for District residents, and encouraging economic development along its corridor. In contrast to the typical bus barns and maintenance sheds of today, the Car Barn Training Center embodies the District’s aspirations of equity and development through its community-oriented, civic architecture.

## GOOD NEIGHBOR

The Car Barn Training Center was driven by the goal of sensitively integrating a contemporary civic structure into its historic context—an educational campus built for African American students during segregation. Given its site at the southern edge of the historically-designated Young, Browne, Phelps, and Spingarn Educational Campus, the Car Barn Training Center was subject to rigorous review by multiple District and Federal agencies, including the DC State Historic Preservation Office, National Capital Planning Commission, and the US Commission of Fine Arts. The project team focused on creating a project that would harmonize with its historic neighbors through a contemporary application of contextually compatible orientation, massing, and materials. The building’s parti responds to its Georgian neighbors through its civic-scaled, light-colored frame that encloses the masonry volumes of the maintenance bays, operations, and classrooms.

The primary entrance of the building is accessible via a grand staircase that leads to large windows, welcoming the community to approach and observe the maintenance occurring within.

## HEALTHY WORKPLACE

The building focuses on creating a healthy and safe workplace that optimizes and celebrates the work of streetcar maintenance and operations staff. Employees and visitors enter a branded public lobby, where the DC Streetcar logo is punched out of blackened steel accenting an active staircase that leads to public space on the second level. Throughout this zone, views are provided into the maintenance bay, showcasing the activity occurring within. Throughout the building, large windows and north-facing sawtooth skylights allow daylight to flood interior spaces, creating a bright and pleasant workspace. Throughout, the building’s steel structure and concrete slabs remain exposed, reflecting its industrial purpose. On the second floor, flexible conferencing space features operable partitions and modular furniture to support training sessions for streetcar employees and students, as well as community events. A rooftop terrace with comfortable seating is shaded by an array of PV panels to provide staff with a place of respite.

## DEMONSTRATION OF SUSTAINABLE STRATEGIES

As a demonstration project for the Sustainable DC plan, one of the most ambitious municipal sustainability plans in the country, the Car Barn Training Center set new standards for the use of high-performance strategies in DC. The District Department of Energy and Environment participated in the project as a stakeholder, advocating for a building that would showcase its sustainable systems at a community level and exemplify the District’s goal of becoming the healthiest, greenest, and most livable city in the nation.

Sustainable design elements include grass tracks, permeable pavements, stormwater collection and recycling for use in the wash track, native plantings, sunshading, and daylighting strategies. Automated exterior shades on the building respond to the sun, reducing solar heat gain and glare. Three installations of PV panel arrays are monitored to demonstrate qualitative differences between different types on solar panels.

In addition to harvesting energy, the design focused on reducing energy consumption. The large volume of the maintenance space allows for warmer air to rise above occupied space, exiting through operable skylights and assisted by low-velocity, high-volume overhead fans. Since the space is not mechanically cooled, adequate airflow became a driving focus for increasing occupant comfort in warm and humid months. Radiant heating located within the concrete floor slab heats areas occupied by workers without wasting energy on heating the entire volume. Variable Refrigerant Flow (VRF) fan coil units heat and cool the office space, reducing energy use while allowing for plentiful outside air to be delivered to occupants.

RETURN TO A CIVIC APPROACH



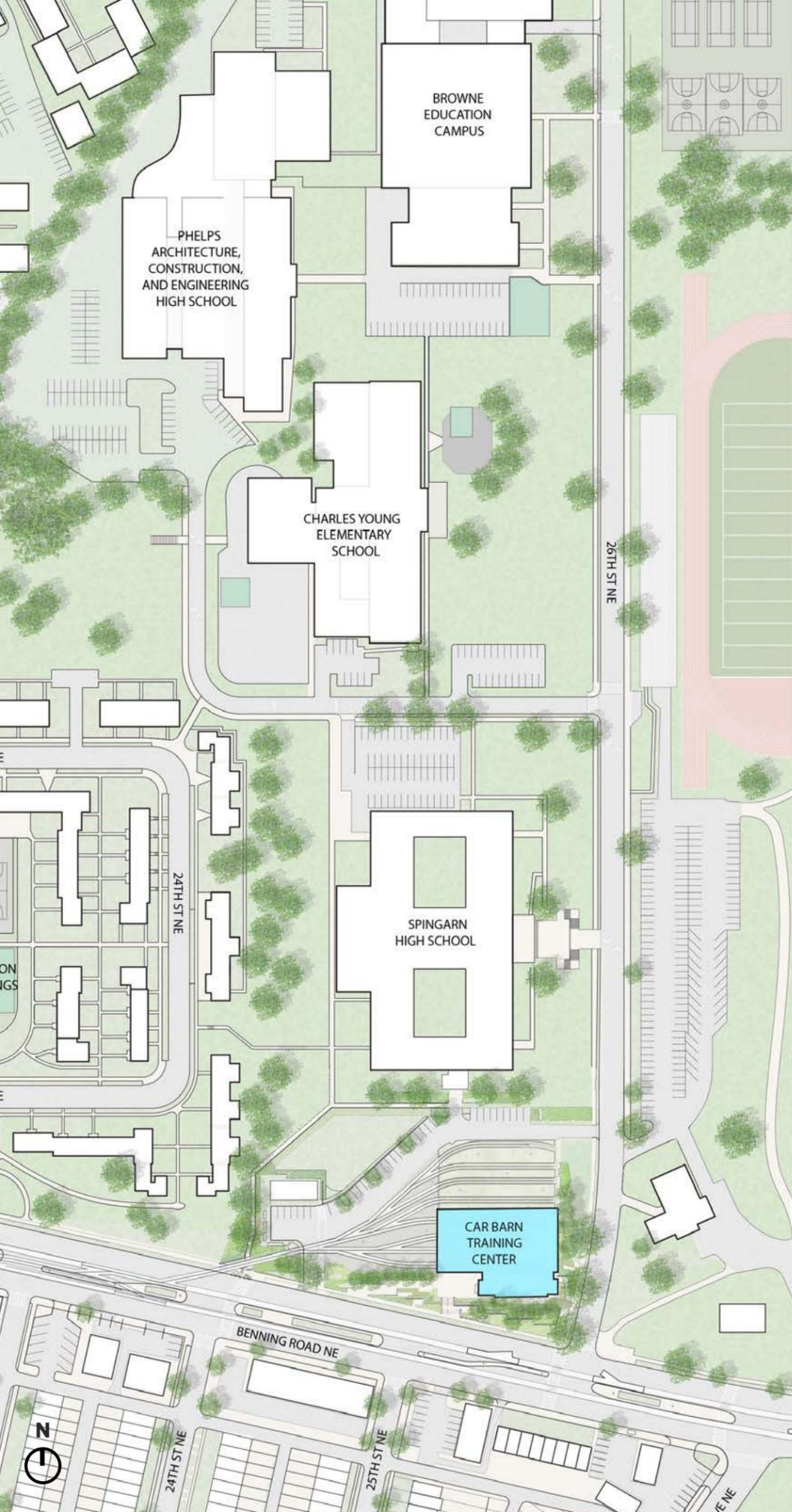
Historic DC streetcar facilities.





dc streetcar

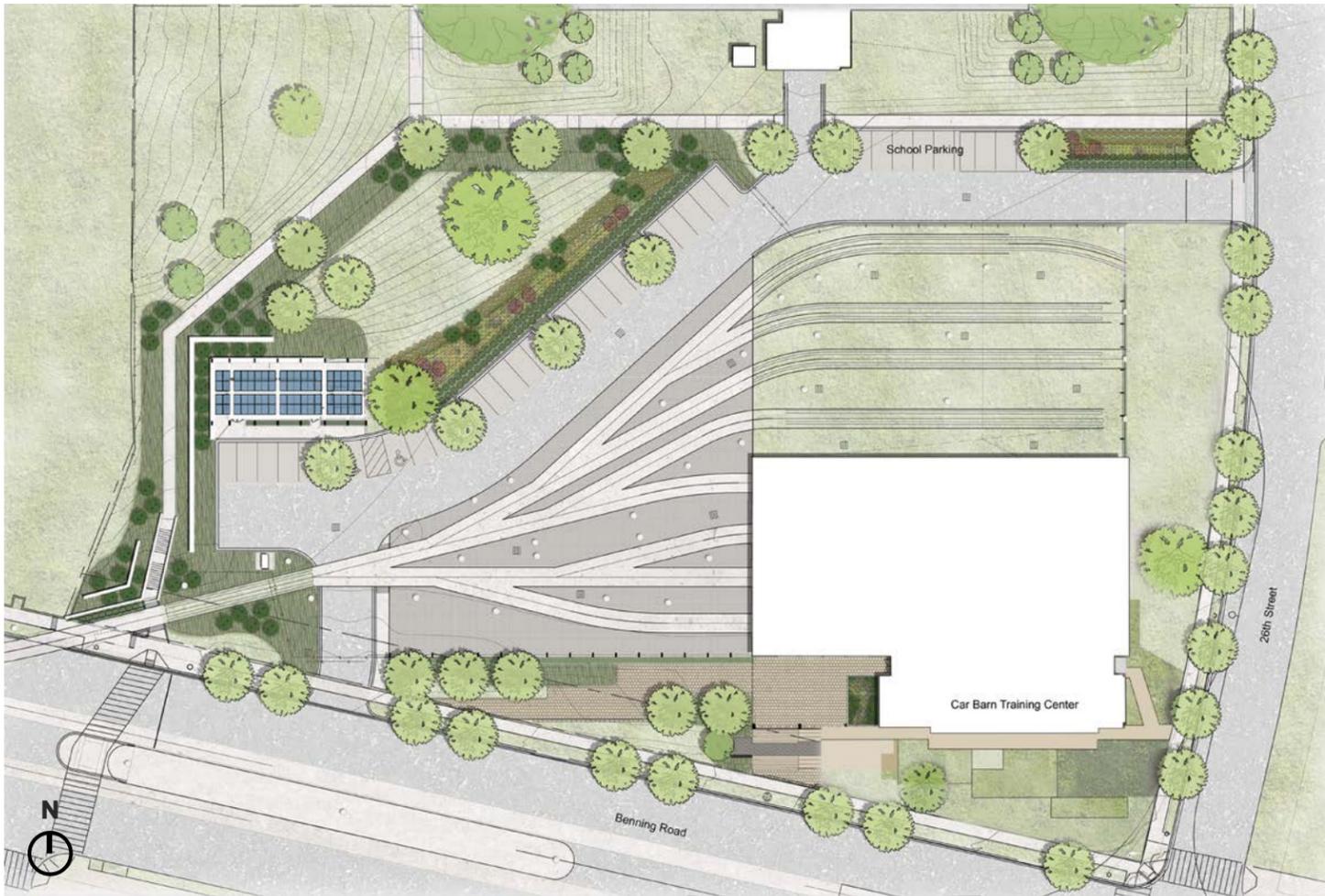
dc



**GOOD NEIGHBOR**



*Browne Education Campus and Charles Young Elementary School*





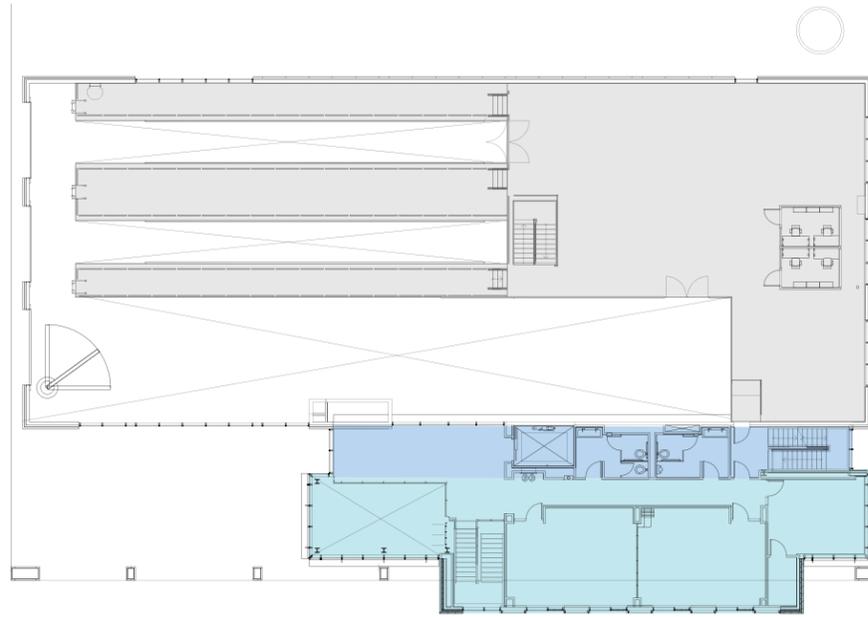
CAR BARN TRAINING CENTER

BENNING ROAD NE

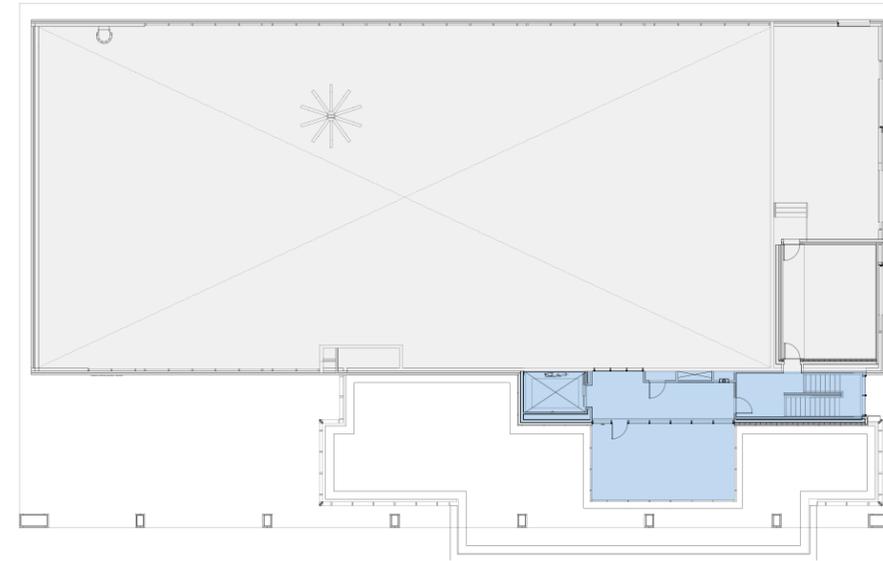
26TH STREET NE



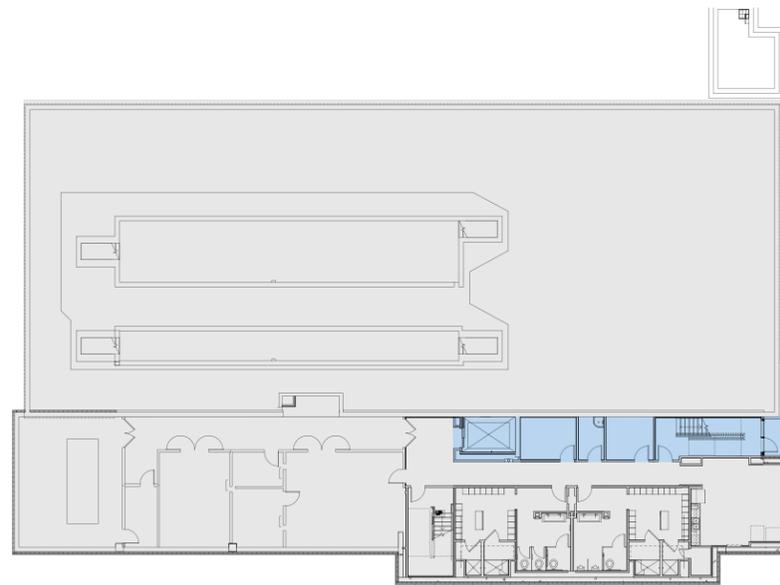




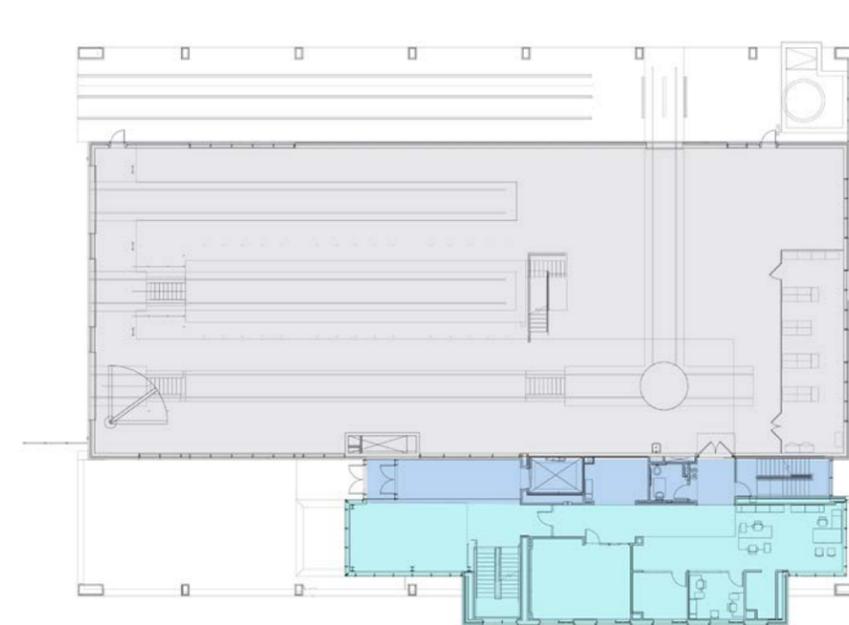
**SECOND LEVEL**



**MEZZANINE**



**LOWER LEVEL**



**GROUND LEVEL**

- Maintenance
- Circulation
- Operations



HEALTHY  
WORKPLACE





**⚠ DANGER**  
OCB  
Electrical  
No Access

**⚠ DANGER**  
OCB  
Electrical  
No Access



## DEMONSTRATING HIGH-PERFORMANCE SYSTEMS

-  Photovoltaic Panels
-  Automated Sun Shades
-  Operable Windows
-  Green Roof
-  Radiant Floor Heating
-  Passive Ventilation
-  High-Volume, Low-Speed Fans
-  Stormwater Cistern /  
Streetcar Wash Water Recycling
-  Non-Potable Water Re-Use
-  Grass Tracks

