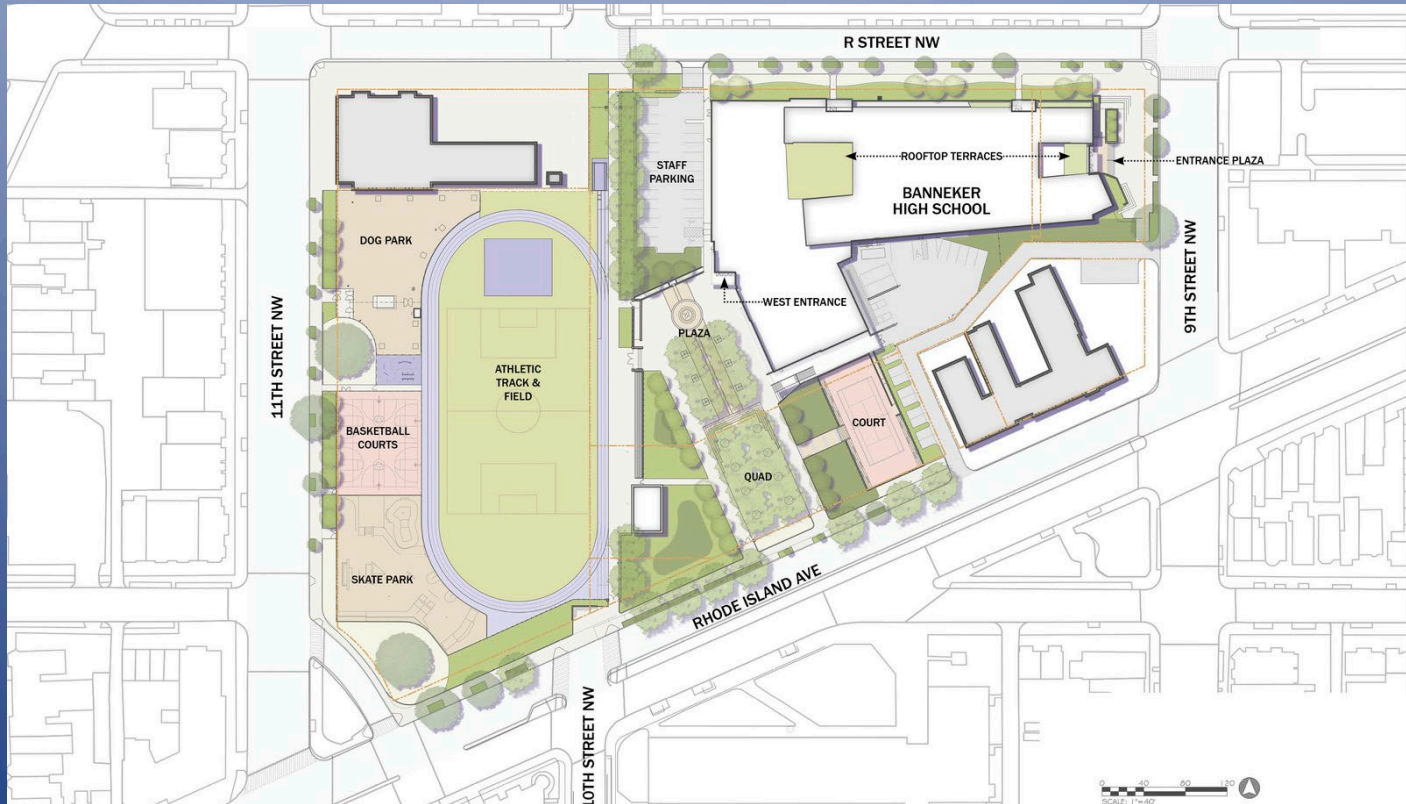


2023 Exhibition of School
Planning and Architecture
Northeast Region
Benjamin Banneker Academic
High School & District of
Columbia Public Schools
Washington, DC

Benjamin Banneker Academic High School



Benjamin Banneker Academic High School



A Campus for School and Community

Community Environment

Benjamin Banneker Academic High School is the highest-performing public school in DC. Its mission is to provide its predominantly African-American and Latinx students with a pathway to academic and life-long success. As testament, year after year 100% of its students graduate high school and 100% are accepted to a college or university. As these students are often the first in their families to be able to pursue a college education, this project most prominently promotes equity through its supportive, healthy, and culture-rich environment that will have a sustained impact on a future generation of diverse environmental stewards and leaders.



Good Neighbor

Community Environment: *Continued*

Designed to respect the adjacent historic rowhouses, the building also asserts the future-focused mission of the school, and the value that the families of Washington, DC, place on education, sustainability, and community. Echoing the rowhouses across the street, the north-facing façade is articulated as a series of discrete volumes, and the windows playfully interpret the proportions of those on the facing houses. These same windows are a critical part of the building's daylighting strategy.



A Dynamic and Collaborative Evolution of the Library

Learning Environment

The new building for Banneker is designed to foster its strong culture, provide state-of-the-art labs and instructional spaces, and create a “collegiate ambiance.” The Learning Commons is the core unifying element of the new building—appropriately reflecting and contributing to the school’s culture. As it stacks through the central atrium, it integrates all of the program spaces on every level by providing centrally located, open, and collaborative spaces for study, socialization, and collaboration. This allows it to become a beacon of natural light into an otherwise deep building footprint. Skylights suffuse each level with natural light and generous interior glazing in adjacent instructional spaces allows natural light.



Light-filled, Collaborative Learning Environments

Learning Environment: *Continued*

Through engagement with students, it came to light that like college students, the Banneker students have the agency to learn and collaborate in the setting and environment that best suits them. The design, which features a four-story cascading learning commons that provides a diversity of space so that students can come together and collaborate or retreat to quiet spaces for individual studying. This Learning Commons is an inspiring space that provides formal and informal places to gather, socialize, and collaborate. Skylights suffuse each level with natural light and generous interior glazing in adjacent instructional and gathering spaces allows natural light to supplement daylight from exterior windows, enhancing the learning environment.



Indoor Environmental Quality

Physical Environment

By orienting the building along the east-west axis, instructional spaces face north-south—resulting in a 9% energy consumption reduction and improving daylight autonomy, glare reduction, and solar heat gain mitigation—which impact energy consumption and user comfort and performance. Window-to-wall ratio targets and energy and daylight studies created a high-performance envelope with intentionally placed glazing to exceed the spatial daylight autonomy target of 65%. The goal is that teachers never need to turn on the lights or pull the shades. Generous interior glazing in instructional spaces allows natural light to supplement daylight from exterior windows, enhancing the learning environment and keep students constantly connected to their context.



Seamless Integration

Physical Environment: *Continued*

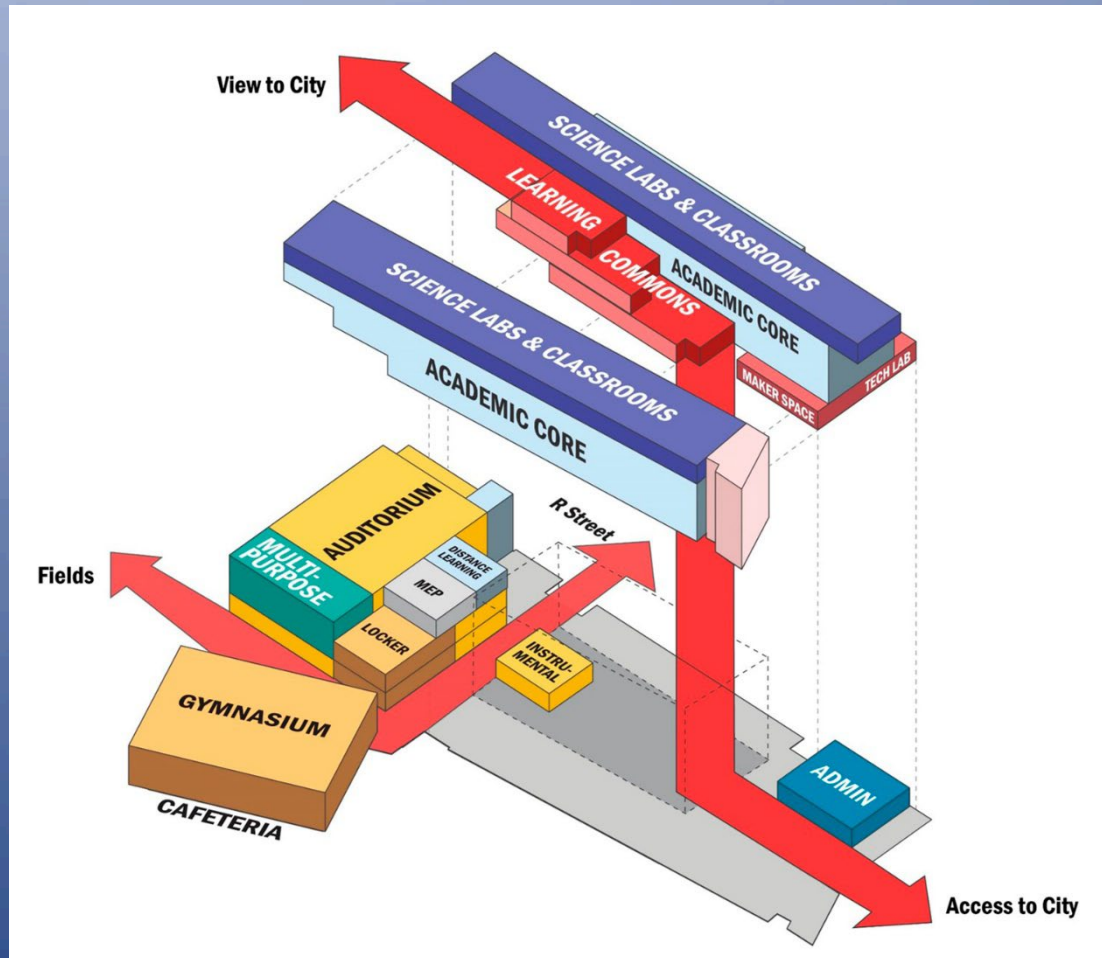
The design team took advantage of every opportunity in the school to create a seamless integration between design, sustainability, learning, and community. Window-to-wall ratio targets and energy and daylight studies created a high-performance envelope with intentionally placed glazing to exceed the spatial daylight autonomy target of 65%. Celebrating access to natural light throughout, even in stairways, allows students to remain connected to their context even when transitioning between classes. The stair in the Learning Commons showcases materials selected for their optimization of aesthetics, health and safety, durability, and proven long-term performance.



Establishing the “Heart of the School”

Planning Process

To create a “collegiate ambiance,” the Learning Commons—a dynamic and collaborative evolution of the library—functions as Banneker’s literal and figurative heart. Every level of this vertical, four-story campus engages this central space, providing formal and informal places to gather, socialize, and collaborate.



Collegiate Ambiance Inside and Out

Planning Process: *Continued*

Gateways onto campus and a new plaza adjacent to the building help establish a collegiate ambiance on campus and provide places for formal and informal learning to flow seamlessly out of the building into the landscape. Like an academic quad one might find at a college campus, the building defers to the landscape, the school makes itself backdrop to the community space. While the school's front door faces east, the west side of the campus is, in many ways, oriented to the community. The massing of the stacked gym and cafeteria creates a notable civic presence on Rhode Island Avenue, a major thoroughfare through the city, and the open spaces provide places for the school and the community to come together. An integrated dog park and skate park create a campus that is truly the center of its community.



An Ecosystem of Learning Places

Revolutions in Learning

The most provocative example of innovation and revolution in learning in the school is the Learning Commons—an ecosystem of spaces, arranged vertically and staggered like a stair, through the main atrium of the school. The design team asked “Why isn’t the whole school a learning commons?” The answer results in a space that confuses itself with one found at a four-year institution—which is exactly the point. These students are already achieving at a very high level: this environment elevates and respects them, providing a natural springboard for their next act as lifelong learners. Serving students who are typically the first in their families to attend college, the high-performance, safe, healthy school delivers an impactful message that belongs to everyone.



Homage to Namesake

Revolutions in Learning: *Continued*

The Learning Commons culminates in "Skyplace," an open-air roof terrace with views to the Washington Monument and across the city that honors Benjamin Banneker's achievements as an astronomer and his key role in establishing the plan for Washington. By honoring the school's namesake, an African-American polymath who acquired great knowledge and skill despite the constraints imposed by an 18th-century society, "Skyplace" inspires today's students while also providing a place for respite, renewal, and perspective.

The windows are inscribed with a letter Benjamin Banneker wrote to Thomas Jefferson, overlaid with Banneker's solar eclipse diagram. The design of this space underscores the concept that education is not limited to the building's classrooms.



Floor plan



- LEVEL 1**
- 1 WELCOME CENTER
 - 2 CITYPLACE
 - 3 CLASSROOM
 - 4 CAREER CENTER
 - 5 TEACHER COLLABORATION
 - 6 BIKE STORAGE
 - 7 INSTRUMENTAL CLASSROOM
 - 8 PERFORMING ARTS CLASSROOM
 - 9 AUDITORIUM
 - 10 LOCKER ROOM
 - 11 TRAINING ROOM
 - 12 COMMUNITY ENTRANCE
 - 13 DINING
 - 14 KITCHEN

0 10 50 150



Floor plan

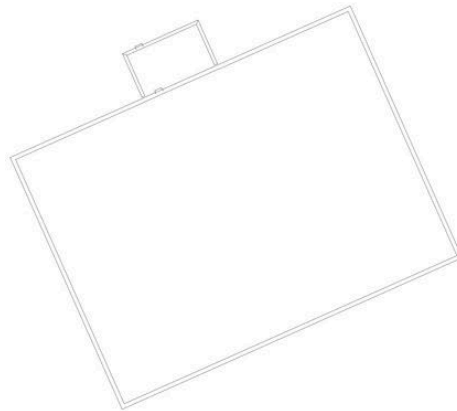
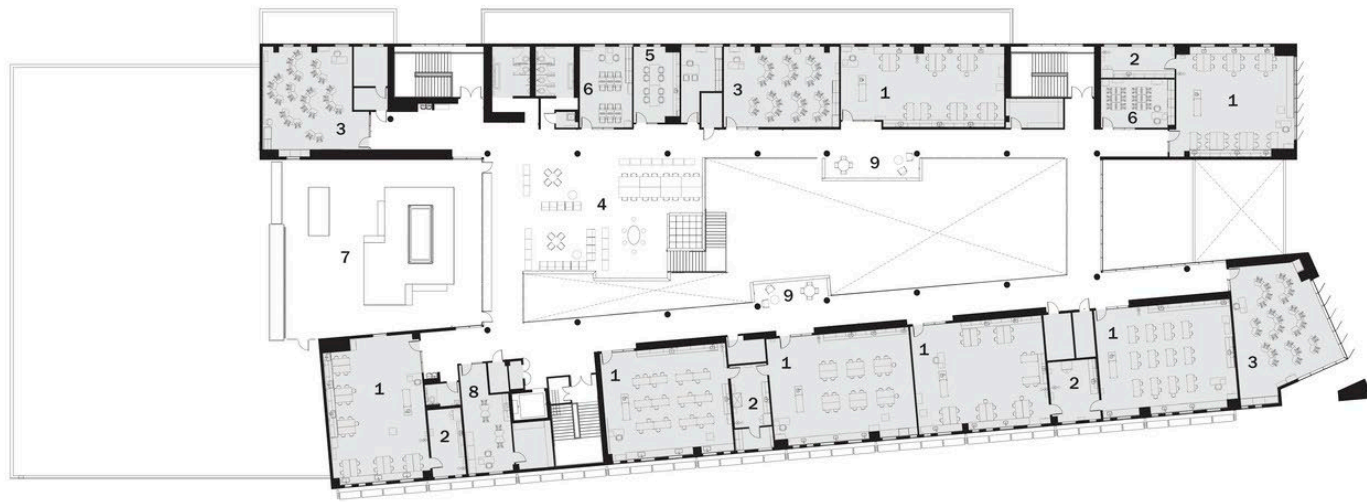


- LEVEL 2**
- 1 TECH LAB
 - 2 MAKERSPACE
 - 3 CLASSROOM
 - 4 TECH PLACE
 - 5 TEACHER COLLABORATION
 - 6 RESOURCE ROOM
 - 7 DISTANCE LEARNING
 - 8 HEALTH SUITE
 - 9 COLLABORATION
 - 10 LOCKER ROOM
 - 11 MULTIPURPOSE ROOM
 - 12 FITNESS ROOM
 - 13 CONCESSIONS
 - 14 GYM

Floor plan



Floor plan



LEVEL 4

- 1 SCIENCE LAB
- 2 PREP ROOM
- 3 CLASSROOM
- 4 READING ROOM
- 5 TEACHER COLLABORATION
- 6 RESOURCE ROOM
- 7 SKYPLACE
- 8 SPEECH/OT/PT
- 9 COLLABORATION

0 10 50 150



Exhibition of School Planning and Architecture

Project Data

Submitting Firm :	Perkins Eastman DC
Project Role	Architect and Interior Designer
Project Contact	Sean O'Donnell FAIA, LEED AP
Title	Principal-in-Charge
Address	One Thomas Circle, NW, Suite 270
City, State or Province, Country	Washington, DC
Phone	202 495 7430

Joint Partner Firm:	Perkins Eastman Architects
Project Role	Associate Architect and Sustainability Consultant
Project Contact	Omar Calderon Santiago AIA
Title	Principal
Address	One Thomas Circle, Suite 200
City, State or Province, Country	Washington, DC
Phone	202 861 1325

Planner on Record:	
Name	
Address	
City, State or Province, Country	
Phone	
Email	

Construction Firm:	MCNBuild
Project Role	Design-Build Builder
Project Contact	Bassem Boustany
Title	Principal in Charge
Address	1214 28th Street NW
City, State or Province, Country	Washington, DC
Phone	202 333 3424

Exhibition of School Planning and Architecture

Project Details

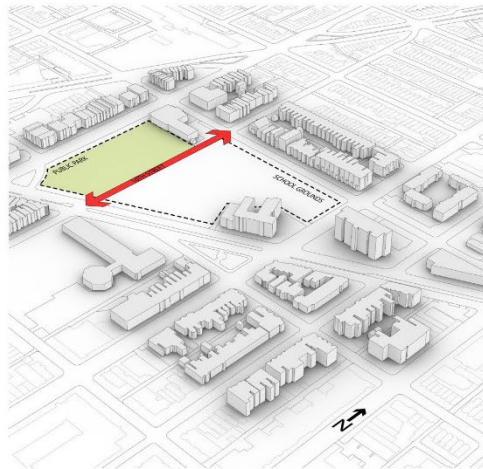
Project Name	Benjamin Banneker Academic High School
City	Washington
State	District of Columbia
District Name	District of Columbia Public Schools
Supt/President	Dr. Lewis Ferebee
Occupancy Date	August 30, 2021
Grades Housed	9-12
Capacity(Students)	800 students
Site Size (acres)	3.5 acres
Gross Area (sq. ft.)	175,000 sf
Per Occupant(pupil)	218.75 sf/student
gross/net please indicate	
Design and Build?	Yes
If yes, Total Cost:	\$135,571,675.79
Includes:	Site Development, Building Costs, Furnishing Costs, Technology Costs
Project Costs	
If no,	
Site Development:	
Building Construction:	
Fixed Equipment:	
Other:	
Total:	\$135,571,675.79

Supporting/Supplemental files/Images



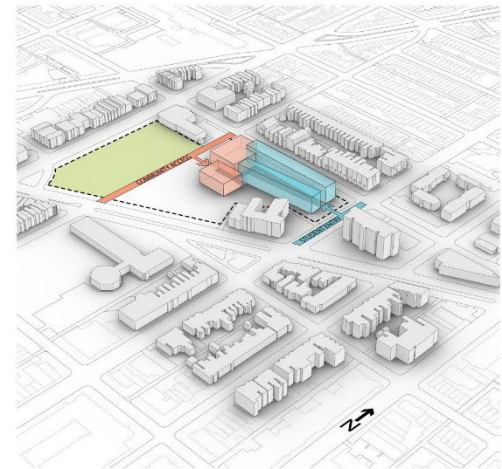
The Site

Efforts touted as urban revitalization in the 1960s consolidated the site into a super block disrupting pedestrian and vehicular flow on the north-south direction.



Extension of 10th Street

Extending 10th street as a pedestrian path through the site re-establishes pedestrian connectivity in the neighborhood.



Recreation and Education Uses

Uses on the site are distributed East and West of the 10th street pedestrian corridor, Recreation and Athletic uses to the West and Academic uses to the East.

SITE STRATEGY

With a compact, oddly shaped site, half of which is a public park, resolving the desire for enhanced outdoor space was a major challenge. The design team worked collaboratively with all parties to increase open space on-site to serve community and school. This was accomplished by vertically organizing the building and thereby reducing its footprint

relative to the building that preceded this one on the same site. The community especially benefited from the relocation and rebuilding of the skate and dog parks.

Elongating the building within its compact footprint, along an east-west axis, was an early first step at creating an energy-efficient building with enhanced indoor environmental qualities to support learning

Supporting/Supplemental files/Images

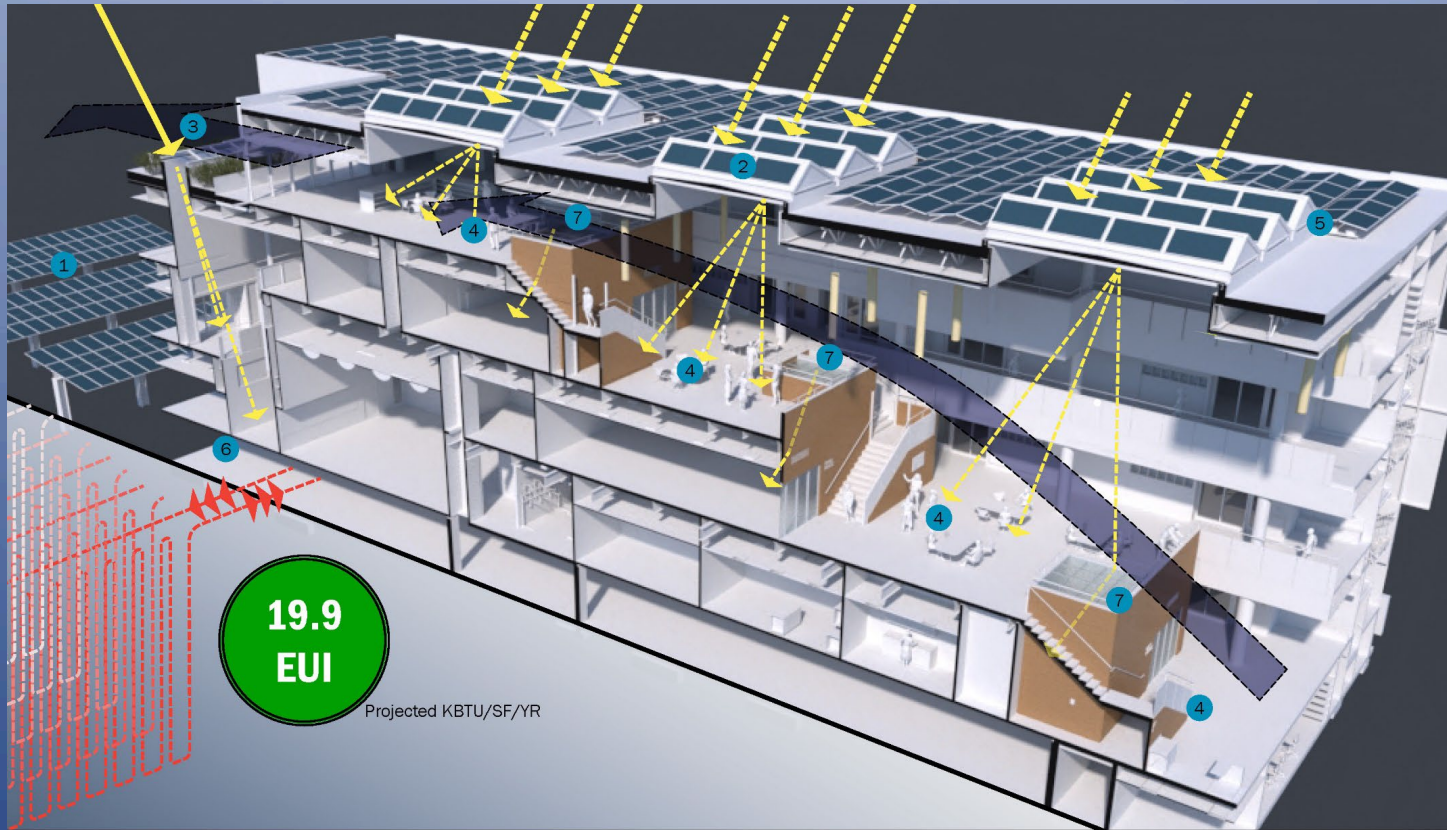


A CAMPUS FOR SCHOOL AND COMMUNITY

While the school's front door faces east, the west side of the campus is, in many ways, oriented to the community. The massing of the stacked gym and cafeteria creates a notable civic presence on Rhode Island Avenue, a major thoroughfare through the city, and the open spaces provide places for the school and the community to come together. A dog park

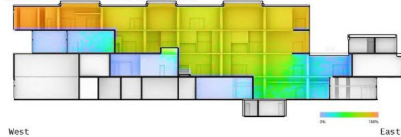
and a skate park have been integrated to create a campus that is truly the center of its community. Featuring bioretention areas and framed by 64 newly planted trees, Banneker's campus is an inviting resource for the school and community.

Supporting/Supplemental files/Images



South Facing Analysis Surface

Spatial Daylight Autonomy (sDA_{300/50})



Daylight analysis of the Learning Commons/"Heart of the School" reveals the positive impact of the skylights and lightwells

Legend

- 1 Photovoltaic arrays on trellis structures over parking
- 2 Northern-facing sawtooth skylights integrated with southern-facing PVs distribute diffused daylight
- 3 "Skyplace" outdoor classroom/rooftop space
- 4 Heart of School (Learning Commons)
- 5 Self ballasted photovoltaic array on roof
- 6 Geothermal wells, ground source heat pumps
- 7 Lightwells allow for natural light to penetrate through interior spaces in the core of the building

Supporting/Supplemental files/Images



LIGHT-FILLED SPACES THAT CONNECT TO COMMUNITY

The school reaches out and contributes to its community through extensive glazing, resulting in pervasive natural light, views, and blurred boundaries between inside and outside. By stacking the gym atop the cafeteria and kitchen, generous natural light streams

in through the ample glazing that frames views to the fields outside and neighborhood beyond. These spaces are among those available for community access after-hours.

Supporting/Supplemental files/Images

