# JOHN LEWIS ELEMENTARY SCHOOL

DISTRICT OF COLUMBIA PUBLIC SCHOOLS | WASHINGTON, DC



# JOHN LEWIS ELEMENTARY SCHOOL

was designed to be the first school in the District of Columbia to achieve Net Zero Energy (NZE). The project is also pursuing LEED for Schools Platinum and WELL certification, setting a new global benchmark. The project's design principles focused on civic presence, community connectivity, and student experience and wellness to create a high-performance, 21st-century learning environment.

The school replaces an obsolete, brutalist, open plan building while intentionally retaining its best aspects flexible space and ease of communication—and while also providing better adjacencies, daylighting, acoustics, security, and outdoor space in order to enhance wellness and building performance, with the ultimate goal to enhance educational outcomes.

The building reads inside and out as a series of intimate, child-scaled houses that foster collaboration and strong relationships inside and feel at home in the adjacent residential neighborhood. The school's "civic presence" features a large photovoltaic array to inspire the entire community to embrace sustainable design.

The design emphasizes outdoor recreation and blurs the walls of the classroom to create connections with the natural world, known to improve student health and academic achievement. These connections are further reinforced through interior and exterior textures, materials, and environmental quality that relate to DC's most prominent park a few blocks from the school. This is prominently seen in the library, where discovery zones and reading nooks are anchored by a large-scale mural and a "treehouse" maker-space.

An high-performance dashboard tracks the building's energy consumption, showcases the building's sustainability features, and links to the school's curriculum to address topics such as Social and Environmental Justice, Climate Change, and Water Conservation.



OWNER SITE AREA **BUILDING AREA SF PER STUDENT** STUDENT CAPACITY **DC** Department 162,948 sf 88,588 sf Current: 371 238 sf/student of General Services (Capacity: 550) **SCOPE OF WORK** AND BUDGET GRADES **ENERGY USE INTENSITY CONSTRUCTION COST COST PER SQUARE FOOT OCCUPANCY DATE** PreK-5 22.18 EUI August 2021 \$68,908,145 \$777.85/sf

### SCHOOL AND COMMUNITY ENGAGEMENT

## **COMMUNITY CONTEXT**

John Lewis Elementary School is located at 1335 Farragut Street NW in Washington, DC. The property, owned by the District of Columbia, is located in 16th Street Heights, a predominantly residential neighborhood with a mix of single-family bungalow-style homes, attached row houses, and a notable number of religious institutions.

The property is bound by two residential streets to the north and south, 14th Street NW to the west, and an alley with adjacent residential property to the east. 14th Street NW is a north-south artery connecting downtown DC with upper northwest DC and Silver Spring, MD. The existing school building, completed in 1976, had its main entrance set back from Farragut Street NW and a secondary entrance along Gallatin Street NW. These entrances were maintained in the final design as they are key programmatic elements to school pick-up and drop-off.

The school is located within the watershed of Rock Creek Park, Washington DC's most prominent park.





# INVOLVED, COMMITTED STAKEHOLDERS

As a public school project, the John Lewis Elementary School project underwent an intensive process of client input incorporating long-term vision, hopes, desires, educational programming, and facilities. During the co-creation of the design, hundreds of meetings were conducted, ranging from public meetings to smaller focus groups.

A wide variety of constituencies actively participated in the design process, including:

- Washington, DC,'s 16th Street Heights neighborhood
- Parents
- Administration
- Faculty
- Staff
- Students
- Washington, DC, Agencies
- Local and State Elected Officials
- DC Department of General Services (owner)

#### Workshop Collaboration

Since the inception of the project, working together with DC's Department of General Services, the design and planning process drew heavily on input from the future building's direct users—the faculty and staff of John Lewis Elementary School, District of Columbia Public School's leadership, students, and community. Beyond striving to reach the owner's goal of Net Zero Energy for this building, the design team also aligned their pursuit of Net Zero Energy with strategies that would improve the indoor environment from the daylight, thermal comfort, acoustic, and air quality perspectives. Pursuing Net Zero Energy on this project helped us to also pursue what we call "Net Positive Education"-the creation of a high-performance learning environment that will positively support the health and education of all John Lewis Elementary School students, teachers, and staff.

Interactive, collaborative workshops were critical in providing the essential details of the unique and previously unimagined educational environments needed to implement new and innovative educational techniques. Separate/additional focus sessions were conducted for alignment with the Net Zero Energy goal.

#### Student, Teacher, and Staff Engagement

Underlining the authenticity of community engagement, the process sought to draw out appropriate participation by the school students themselves through a Pre-Occupancy Survey.

Teachers and students at West Elementary School (the predecessor to John Lewis Elementary School) participated in a Pre-Occupancy Evaluation in 2018 as a part of a larger study ("Investing in Our Future" white paper, published in 2018) around Indoor Environmental Quality conditions of classrooms at a total of nine modernized vs. non-modernized elementary and middle schools in the District of Columbia Public Schools (DCPS) district. Factors surveyed included daylight, thermal comfort, acoustics, and air quality.

PreOE data included IEQ measurements on-site and a questionnaire or drawing exercise for students, faculty, and staff. The findings of this study informed DCPS's

Stakeholders collaborated to produce, discuss, and critique conceptual options and sustainability analyses to arrive at the best scheme. To ensure the client's Net Zero Energy goals and the design team's Net Positive Education goals were aligned, the team generated a full package of sustainability analyses. In addition to the concept options and site plans, shown here are the solar analyses of the exterior walls as well as outdoor thermal comfort.



















Aligned with the design team's hypotheses, the results of this study indicated that from an Indoor Environmental Quality satisfaction perspective, modernized schools showed statistically significant improvements over non-modernized schools. Faculty and students alike are more satisfied with IEQ in their classrooms and measured IEQ improvements support this increase in satisfaction. Overall, this study supports the continued funding of modernizations of the existing school building stock, using high-performance design criteria in order to protect the health, well-being, safety, and satisfaction of those that teach and learn in our school buildings. These improvements in IEQ would then lead to both improved student and faculty satisfaction and well-being, and improved school



#### 73371 | ELEMENTARY SCHOOL DRAWING ACTIVITY

• Color in the circle next to your school:	O C.W. Harris Elementary School		Q Lafayette Elementary School		O Watkins Elementary School	
	O Houston Elemen	tary School	O Marie Reed El	ementary School	O West Educati	on Campus
<b>2</b> Color in the circle next to your grade:	O Kindergarten	O 1st Grade	🗭 2nd Grade	O 3rd Grade	O 4th Grade	O 5th Grade

#### Fill in the blanks:

The in my classroom makes m

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#### **6** Draw a picture of your sentence:





Top: Sample of a student drawing from the Pre-OE effort in 2018.

Left: "Investing in Our Future" white paper, published in 2018, which includes data and questionnaires from West ES (now John Lewis ES) teachers, staff, and students around their perceptions of various Indoor Environmental Quality (IEQ) factors (aggregated with eight other schools.

Far Left: Summary of findings from students and teachers across the modernized schools evaluated in the study.

## CHALLENGES AND OPPORTUNITIES

The challenges in the design of John Lewis Elementary School were also its opportunities.

#### Replacement for a Beloved, but Outdated, School

While the new building replaces an obsolete, brutalist, open plan building, it also intentionally was able to retain its best aspects—flexible space and ease of communication while providing better adjacencies, daylighting, acoustics, security, and outdoor space in order to enhance wellness and building performance, with the ultimate goal to enhance educational outcomes.

#### Net Zero Energy

The building is paired with another school, concurrently designed, that is also targeting NZE. The excess energy expected to be generated at John Lewis will help this other building also achieve NZE. This multi-site approach broadens the perspective from a single building to the District's entire inventory, encouraging an approach to citywide radical energy conservation.

#### **Compact Urban Site**

On its compact urban site, optimizing visual and physical access to the outdoors was a priority to enhance user health and well-being while still designing in safety and security.

The John Lewis site drops approximately 20 feet from the west edge to the east edge of the property. Rather than being treated as a liability for the design to be negated through regrading or providing basement or partial basement spaces, the site topgraphy was leveraged as an asset. Stormwater flows on the site are daylit to teach students about hydrology; terraced seating is a gathering and performance space.

The school's proximity to Rock Creek Park and its location within the Rock Creek Park Watershed was both a challenge and an asset: afforded it many opportunities to connect with the landscape, utilize the site as a teaching tool, and pay homage through interior design strategies.

## ASSETS

The John Lewis community was committed to positive change throughout the entire planning, design, and construction phases. The introduction of a new learning environment was seen as a crucial opportunity to transform teaching and learning. Case in point: When discussing the Sustainability Dashboard located in the school's lobby, Nikeysha Jackson, Principal of John Lewis Elementary School, said: "When we were creating the dashboard, we wanted to make sure that the items were relevant to kiddos. Understanding their own impact—how plugging out a laptop at the end of the day is helping to preserve energy consumption, or turning off the water faucets when they're not being used—is so important."

The willingness of the staff and teachers to embrace this powerful technology is but one example of many of the school's extraordinary assets in terms of leadership and personnel.

From both a facility and a teaching perspective, the site is a major asset. With proximity to DC's most prominent park, the outdoor learning opportunities exceed what most school communities have access to. This not only enhanced but informed the curriculum and the design of the school itself.

## **COMMUNITY VALUE**

Residents of 16th Street Heights had long been advocating for improved educational facilities for neighborhood children. Now with John Lewis Elementary School, community members are once more sending their children to school in their own neighborhood instead of transporting them across the city.

As Mayor Muriel Bowser shared at the school's ribboncutting in 2021: "When I became Councilmember in 2007, what I heard from families is that they woudln't go to their neighborhood schools in Ward 4.... And what I know now is that Ward 4 families are selecting their neighborhood schools, and they're doing it from PreK all the way to 12th grade. and that is a turnaround that is not only important for our kids, it is important for the life of our system."





Site photos of the previous building (named West) that contained many attributes beloved by students, faculty, and staff that were incorporated into the new John Lewis Elementary School.



# EDUCATIONAL VISION AND GOALS

For John Lewis Elementary School, our design principles focused on civic presence, community connectivity, and most importantly—the student experience. Ultimately, these principles supported our overarching goal of creating a high-performance 21st-century learning environment.

# **1** Connect North and South Neighborhoods

The existing site design did not take full advantage of the large property and its views. Redesigning the site to provide physical and visual through-block connections enhances the arrival experience, improves sightlines and site security, and better engages with the surrounding neighborhood.

### **2** Design for Net Zero Energy

The school is designed to be DC's first Net Zero Energy school. High-performance building design began with proper siting and orientation. The orientation of the building's windows, skylights, and openings face north and south to allow the desirable solar radiation during the winter, while minimizing glare and heat gain during the summer. This ultimately reduces energy loads for lighting and HVAC, while utilizing PV arrays to generate a surplus of the energy used.

## **3** Achieve Net Positive Education

Many strategies that will be pursued for Net Zero Energy also support the goal of Net Positive Education, creating a high-quality learning environment. For example, a well-integrated daylighting design has multiple positive impacts on a school. The design for John Lewis targets daylight autonomy in 90% of regularly occupied spaces, while minimizing glare and direct heat gain. Along with daylight, windows also provide views to the exterior, which help students orient themselves in space, connect occupants with weather and the natural world, and enhance school security.

### **4** Connect the Indoors and Outdoors

The design emphasizes outdoor recreation and connections with the natural world, which is known to improve student health and academic achievement. Students have access to outdoor play areas (for both structured and unstructured play), a garden, an outdoor classroom, and an amphitheatre/performance space. Access to some of these amenities after hours and on weekends makes the school a desirable place for the community as well.

### **5** Create Public and Private Zones

The design incorporates common spaces that can be used by students as well as other community groups while maintaining clear separation from primary education spaces to ensure school safety and security. Special care was given to the furniture and finishes in these spaces to ensure they were flexible, easy to reconfigure for different uses, and easy to maintain.

### **O** Design to the Scale of the Child

The scales of the building and landscape provide an inclusive, welcoming environment for children of all ages, backgrounds, and abilities.

### Establish the Heart of the School

The library and discovery zones are central to the learning and teaching activities. They comprise the heart of the school and the community. The design team envisioned the new "heart" of the school being a center for learning, socialization, and community engagement for children of all ages, backgrounds, and abilities.

### 8 Create Classroom "Neighborhoods"

Classrooms are grouped together around their own common spaces to encourage collaboration for students and teachers by grade level. Collaborative spaces provide areas for independent learning, instructional coaching, interdisciplinary and extracurricular activities, and project-based small-group learning.

### **9** Project a Civic Presence on 14th Street

14th Street is a major thoroughfare in Northwest Washington, running through commercial corridors and residential neighborhoods. Our design intent was to use the architecture and landscape of the school to create a placemaker on 14th Street that identifies John Lewis, showcases DCPS's flagship Net Zero Energy school building, and signifies DCPS's commitment to a more sustainable future. **10** Sculpt Memorable and Interactive Outdoor Spaces The John Lewis site drops approximately 20 feet from the west edge to the east edge of the property. Rather than being treated as a liability for the design to be negated through regrading or providing basement or partial basement spaces, the site topgraphy was leveraged as an asset. Stormwater flows on the site are daylit to teach students about hydrology; terraced seating is a gathering and performance space.

### **11** Create Moments of Joy and Wonder

Learning through imaginative and hands-on play is powerful. The children of John Lewis deserve a holistic environment that nurtures their bodies and minds. The design not only exceeds the baseline functional requirements and educational specifications, but also creates a joyful "home away from home" where children feel safe, valued, and encouraged to reach their fullest potential.

outside.

## **NET POSITIVE EDUCATION**

The team focused on not only striving to reach the aggressive goal of Net Zero Energy for this building, but also aligning our pursuit of Net Zero Energy with strategies that will improve the indoor environment from a daylight, thermal comfort, acoustic, and air quality perspective. With the pursuit of Net Zero Energy came the pursuit of a "Net Positive Education": The creation of a high-performance learning environment that will positively support the health and education of John Lewis Elementary School students.



The energy use in the building is offset in surplus by the PV panel arrays on the roof. The solar power is used to heat water, satisfy plug loads, and address electrical needs of the building.

Bioretention ponds located on-site manage stormwater that drains from the roof, helping prevent flooding and oversaturation on-site while cleaning the stormwater through layers of filtration.

The level of daylight autonomy that the spaces achieve eliminate the need for high levels of electric light. Sunshades and light shelves reduce glare and distribute light evenly. CO2 sensors communicate with the building systems to adjust to occupant loads.

The air circulating throughout the building is brought in directly by a 100% outside air-handling unit that provides 30% more outside air than code minimum requirements. This air is used to ventilate only 2-3 rooms before returning to the 1 FILITIO m TE 111 ×. 

> A geothermal well field is located beneath the playground and playing field for ease of future maintenance. The well pipes of water run to the building and use the stable temperature of the deep earth to absorb or shed heat. These pipes are used to heat and cool air and water.

## **IT TAKES A VILLAGE**

The design team conceived of three concepts that would meet the goals and requirements for the new school: "Corner," "Rowhouse," and "Village." The "Village" scheme was chosen for most successfully incorporating the design principles, including:

- Organizes the program into a compact building footprint, which facilitates constructibility, mitigates cost, and reduces heating and cooling loads on the mechanical system
- Provides the largest, most secure outdoor play space for ٠ young children
- Most effectively integrates the architecture within the • landscape to create a cohesive campus
- ٠ Creates a landscape presence on 14th Street NW and increases community connectivity to the campus
- Allows the existing mural to remain as a gateway to the campus on the southwest corner of the site

In addition, the library occurs on both the first and second levels, with the lower library acting as a "Learning Commons," the heart of the school. The adjacency of the Learning Commons to the cafeteria allows for large gatherings and presentations when the cafeteria opens up.

As many of the District's buildings are over 100 years old, the expectation is that this school will serve generations. Its classrooms will allow for technological and pedagogical change in the short term, and its simple plan and structure will readily accommodate intensive change over the long term. Throughout the school, the emphasis on building community-evident in the four-classroom "houses" and the "open plan" library-posits that learning now and in the future is a social act.



First Floor Plan











# ESTABLISHING THE HEART OF THE SCHOOL

An early design charrette found the library as central to the school body. Thus, in the new building the library became the "heart of the school" and acts as central core of circulation, light, entry, and gathering. The interior character of the school alludes to the adjacent Rock Creek Park through use of organic textures, vibrant primary colors, and abstract tree canopies made of acoustic baffles. A maker-space "tree house" overlooks the library and formally mirrors the exterior columns and window boxes. A mural by local Colombian-American muralist Mas Paz, who also had a beloved mural at the previous school building, has pride of place.





Above: The heart of the school organizes the site repsonse and provides a light-filled, energetic place of discovery and delight for students,

Left: Mas Paz's mural at the former campus was beloved by the community. Its spirit lives on in the new school and imbues the building with meaning and import.

# FLEXIBLE AND ADAPTABLE DISCOVERY ZONES

Feedback from the staff and administration showed that despite acoustical issues that the old school building had, flexible space in some capacity is a desirable feature. To minimze the footprint of the building, the academic corridors bleed into these flexible learning spaces, later designated 'Discovery Zones'. Each classroom has garage doors that manually open to these zones.

Tackable surfaces and markerboards line the walls for instruction while movable soft furnisings communicate that the character of these zones is different from typical classroom instruction. Skylights exist overhead to brighten these learning environments. By creating these discovery zones with overhead skylights and baffles, the design maintains flexibility while enhancing the quality of the learning environment.





Above and Left: Spacious corridors allow for both acoustic separation for the classrooms and also opportunities for larger groups to come together and collaborate, as in the previous building (a cherished feature). Instead of shying away from the challenge, the design team embraced the opportunity to combine these seemingly competing interests to create a truly unique experience that directly supports the school's culture.

# NOOKS FOR DISCOVERY AND DELIGHT

Above all, John Lewis Elementary School is a place for children, where they can be their most authentic, inquisitive selves. The school celebrates this through a theme of window and reading nooks—in the library (the "heart of the school"); in the main circulation corridor that looks out on the outdoor learning environment; and in the classroom. These child-scaled, playful moments of respite, discovery, and delight thoughtfully connect students to place and promote connection with other students and the community.







## 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. The cafeteria, right, features acoustic baffles that abstractly recall the trees in nearby Rock Creek Park and connect visually to the streetscape beyond, while the gymnasium, below, puts health and wellness on display for the community. These spaces are among those available for community access after-hours.





Above: Cafeteria featuring artwork, by Jay F. Coleman, that encourages healthy nutrition

Left: Gymnasium with artwork (not fully shown) by Jeremy Jarvis

## INDOOR ENVIRONMENTAL QUALITY

A Pre-Occupancy Evaluation of the previous building showed very poor indoor environmental quality conditions—the school was outside of the comfort zone 63% of the time, had CO2 levels upwards of 2,500 ppm on a daily basis, was 54% underlit, and had poor acoustics. With the goal to maximize performance on each of these criteria to enhance user health, well-being, and satisfaction, the team used the WELL criteria and near real-time computer modelling of the building's performance throughout design to enable informed design decisions around energy, health, and well-being. In addition, John Lewis has 30% increased ventilation rates and exceeds daylight autonomy targets for over 75% of regularly occupied spaces—enhancing educational outcomes.

Daylight indirectly floods classrooms, thus improving thermal comfort and quality of light. Operable windows, manual window shades, and occupant-load controlled ventilation air also contribute to comfortable classrooms. A Pre-Occupancy Evaluation revealed that the previous school building failed on acoustics, natural light and views, and thermal comfort while succeeding, at least anecdotally, on communication and community.

With the goal to maximize performance on each of these criteria to enhance user health, well-being, and satisfaction, the team used the WELL criteria and near real-time computer modelling of the building's performance throughout design to enable informed design decisions around energy, health, and well-being. As a result, the new building enhances each of these factors. For instance, window-to-wall ratio targets and energy and daylight studies of the new high-performance envelope with intentionally placed glazing exceeds the spatial daylight autonomy target of 75%.

> Flexible, light-filled classrooms allow for multiple learning and teaching styles—and teacher and student comfort



## ARTWORK THAT CONNECTS TO CONTEXT

The overall theme for the public art in the school is "Seasons of Rock Creek Park." Nine different public artists used this theme to create and install artwork throughout the building for student, teacher, and staff inspiration and delight. The artwork was commissioned through DC Department of General Service's Percent for Art Program.

> Right: Mas Paz, whose artwork graced the previous building's exterior, painting his large-scale mural that animates the heart of the school Far Right: Katherine Tzu-Lan Mann's "Trees" adorn the academic corridors Below: Martha Jackson Jarvis' "Flying West," which

depicts sunrise and sunset, is on display for the community, as well







### RESULTS

# "THIS BUILDING IS ABOUT HOW WE CREATE GOOD CITIZENS—GOOD, RESPONSIBLE CITIZENS FOR THE FUTURE..."

—Nikeysha Jackson Principal of John Lewis Elementary School

#### District-, City-, and Nationwide Impact

Currently engaged in a Post-Occupancy Evaluation to understand the impact of the new school environment, John Lewis Elementary School has become a model for the District of Columbia Public School's vision of education for the future, not only for students but for the City as a whole.

Previously, the design team and the District of Columbia Public Schools collaborated on extensive evaluations of nine schools, including John Lewis' predecessor building, in the city, as well as a subsequent, more expansive study involving 28 schools, which was awarded the 2019 AIA Latrobe Prize—a two-year, \$100,000 program of research leading to significant advances in the architecture profession. John Lewis is one of the schools included in the research study that assesses indoor environmental quality, educational adequacy, and community impact in modernized and non-modernized schools in order to draw direct connections between the built environment, student and staff satisfaction, and education outcomes. The research will inform a set of tools and design guidelines that will provide architects and school districts across the country with means to assess their own facilities and access actionable interventions that have a demonstrably positive impact on education outcomes. The Latrobe findings, with John Lewis as one of its study schools, will be published in late Summer 2023.

These studies and the PreOE performed at John Lewis' previous facility established the benchmarks for this new high-performance building and learning environment. As the building approaches one year of occupancy, the POE will engage students, faculty, and administrators as well as using on-site measurements to assess the success of the design.

There are five different types of data being collected in the POE study:

- An online questionnaire that assesses building users' perceptions of the quality of the environment and their performance within it
- 2. A worksheet/drawing activity for young student building users about their perceptions of the quality of the environment and their activities within it
- 3. Interviews/focus groups with a sub-sample of the building users
- 4. On-site measurements using sensors to collect indoor environmental conditions (daylight, thermal comfort, acoustics, and air quality) within the schools for four consecutive days, each
- 5. On-site measurements using a Visual Assessment Tool, which rates the schools' design features

# The Post-Occupancy Evaluation is slated to be published and disseminated in Fall 2023.

#### Neighborhood Impact

With many spaces open for evening or weekend use by the community, including the playground, outdoor classroom, nature play courtyard, amphitheatre, and more, the new school has become a place for the community to gather since its completion. In honor of its namesake, the late Congressman John Lewis, the building symbolizes history, respect for community, and progressive thinking at once.

#### Industry Impact

John Lewis has been the recipient of numerous awards, national and trade media recognition, and industry tours.

Among the most prominent of its many awards awards: It was one of 12 education projects in the country to receive a prestigious Education Facility Design Award from the American Institute of Architects in 2022. This national program showcases innovation across the entire learning continuum, displaying how architects are creating cuttingedge spaces that enhance modern pedagogy. It was also selected as an **international representative of K-12 design** and for its use of color at the World Architecture Festival in Lisbon, Portgual—highly visible recognition on the international stage. Most recently, John Lewis Elementary School was chosen as the **People's Choice Winner** in Architizer's A+ Awards across all other primary and high schools submitted.

Media recognition for the project includes two recently published videos by Education Week: "How This School Uses Architecture and Design to Improve Mental Health" and <u>"How Districts Can Improve Mental Health Through</u> Building Design"-which importantly links the project to research that shows that the surroundings that people learn, live, and work in can deeply impact their mental and physical health-perhaps more important than ever as we continue to navigate the changes to the post-COVID educational landscape. Upon its completion, it was featured in Metropolis magazine as "a first of its kind" and was subsequently included in a list of five projects across all typologies that pushed sustainability forward in 2022. It is also cited as a model for how public schools across the country can make simultaneous gains toward sustainability and equity, per Bloomberg/CityLab.

## SITE PLAN

The school is enveloped by green space, reinforcing the design's commitment to indoor-outdoor connections.

The redesign of the site reinvigorated the spatial relationships and connectivity between the landscape, school, and surrounding neighborhood. Located within the watershed of DC's most prominent park, Rock Creek Park—the entrance for which is a short two blocks away—the design of the site landscape embeds natural systems with more dynamic play and learning spaces to blur the walls of the classroom and supports the trips to the park that are incorporated into the school's curriculum.

John Lewis Elementary's landscape was designed as a regenerative design, creating functioning ecosystems, increasing endemic flora and fauna habitat, supporting soil building, and teaching children to love nature within their campus. The natural formations and patterns of the Rock Creek Watershed inspired the landscape design. The western side of the campus consists of "Boulder Run," a natural meadow of native grasses and large local rocks and a large boulder amphitheater that reflect the geology of the creek. In the courtyard, natural wooden "fallen logs" enable early learners to pretend that they are climbing over trunks in a forest. Plantings are based upon the ones of Rock Creek's ecosystems and provide wildlife habitat while also being resilient in city settings and ready for climate change. Understory trees will provide fruit for both local and migrating birds. The native grass "Boulder Run" meadow provides bird, pollinator, and box turtle habitat, exposing students to natural meadows rarely found in urban areas. Native perennials and grasses in the bioretention cells and spiral outdoor classroom should, within one season, become alive with pollinators, many of which are endangered, and become living laboratories to enchant and inspire students.



# SITE STRATEGY

- 01 Path—a central interior corridor forms the spine of the school to connect the two entrances that are integral to the school's operations. The spine splits the program's more public spaces (west) from the private spaces (east).
- 02 Arrive- a shift on the south elevation designates this as the primary entrance
- 03 Scale-classrooms simultaneously scale down to a child and the neighborhood vernacular. The classrooms can be read as protruding bays on the outside, similar to the bungalow homes along the streets to the north and south.
- 04 Courtyard-the academic wing is centrally separated to form a courtyard that optimizes security and daylight.
- 05 Path-circulation within the academic wings connects to the spine.
- 06 Light-the double-loaded circulation paths can allow indirect daylight to penetrate from overhead.
- 07 Zones-the outdoor community ampitheater is sited by shifting the public mass east and adjusting its height proportionally. The public mass becomes home to gathering spaces such as the cafeteria and gym.
- 08 Heart-the 'heart of the school' is carved out from the public mass and its location is formed by the surrounding circulation paths. All school activities are intended to interact with this space. The library is itself the focal point for the John Lewis staff and students.





07

# A CHILD-FRIENDLY SCALE WITHIN A RESIDENTIAL COMMUNITY

The building reads inside and out as a series of intimate, child-scaled houses that foster collaboration and strong relationships inside and feel at home in the adjacent residential neighborhood. As each discrete volume corresponds to an academic neighborhood or a major community asset like the gym, this urban design strategy helps to make the program legible to the children and faculty that use the building. As they approach the campus, they can easily identify their "house"—their own place within the school. Window reading nooks in each classroom are discerned from the exterior through color themes connecting them to nearby Rock Creek Park.



Above: The school's secondary entrance at the North. During the Pre-Occupancy Evaluation, the design team learned how valued this entrance was for the community and for mitigating traffic, and ensured the final design reflected the community's desires.

Right: Courtyard detail illustrates the child scale, the residential feel, and the safety and security of the semi-enclosed courtyard filled with natural forms and elements for imaginative and connected play.





North Elevation

### PHYSICAL ENVIRONMENT

# EXTENDING LEARNING INTO THE OUTDOORS

The design emphasizes outdoor recreation and connections with the natural world, known to improve student health and academic achievement. Students have access to outdoor play areas (for both structured and unstructured play) that metaphorically connect to nearby Rock Creek Park, a garden, an outdoor classroom, and an amphitheater/performance space. As a treasured place for the community, certain school amenities are accessible to the community after-hours and on weekends.



#### Right: Outdoor Classroom

Below, I to r: Nature Play Courtyard; Rock Creek Amphitheatre; Courtyard View from Indoor Nook







### SUSTAINABILITY AND WELLNESS

## HIGH PERFORMANCE ON DISPLAY

From the beginning, the design pursued passive strategies while leveraging the NZE process and tools to enhance the learning environment--achieving what the design team calls "Net Positive Education." The design prioritized strategies that would provide benefits across all of these goals. By orienting the building along the east-west axis, instructional spaces face north or south. The orientation resulted in a 9% reduction in energy consumption and also allowed for improvement in daylight autonomy, glare reduction, and solar heat gain mitigation-which have an impact on energy consumption and user comfort and performance. Windowto-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 75%. The goal is that teachers never need to turn on the lights or pull the shades.

## MATERIALS

As in most school districts, operations and maintenance funding and staffing is always a challenge. With lessons drawn from the District's 100-year-old schools, materials were selected to optimize many factors, including: aesthetics, health and safety, durability, and proven longterm performance. For example, the flooring in the major public spaces of the building is an epoxy terrazzo that should last the life of the building with modest cleaning and maintenance. Likewise, recognizing that the lower walls in a school building's public spaces are susceptible to significant wear and tear, a tile wainscot was used to minimize damage and reduce associated maintenance to the walls. Additional strategies include the specification of a standard one-size-fits-all MERV 13 filter for units throughout the building, facilitates maintenance and simplifies attic stock.

Building materials and products containing recycled content were used throughout the project. Over 15% of the building materials and products, measured by cost, are comprised of pre- and post-consumer recycled content.



Clerestory windows paired with view windows that are shaded externally and have internal light shelves that allow daylight to penetrate deep into the learning spaces and minimize glare.

Clerestory skylights bring daylight into the common spaces and light wells allow for that light to come down to the bottom floor.

Photovoltaic panels on roof.

High windows in the corridor side capture additional daylight into the room.

Geothermal wells and ground-source heat pumps.

### SUSTAINABILITY AND WELLNESS

# **BUILDING AS** A TEACHING TOOL

An high-performance dashboard located in the school lobby tracks the building's energy consumption, showcases the building's sustainability features, and links to the school's curriculum to address topics such as Social and Environmental Justice, Climate Change, and Water Conservation. Through this interactive, online dashboard, students, teachers, and the larger community can continuously discover how they interact with the building, and how the building and campus in turn influence and are influenced by the larger environment. "My Impact" buttons help users understand the micro and macro connections between themselves, the building, the community, and the planet. Teachers and staff were trained on how to use and optimize the features of the dashboard with ideas for how to integrate it into their curriculum.

#### Click here or on the image to the right to visit the school's sustainability dashboard online!

Right: The building's daily energy demand—from heating and cooling to plug loads-is tracked so students and the community can learn how small and large changes in behavior can impact energy consumption.

Below, I to r: A student looks at the Sustainability Dashboard upon entering the school lobby; Two examples of the topics and detail provided by the dashboard





BUILDING DEMAND 7.2 KW 16.7 KW LOW HIGH

CONSUMED

71.7%

80

60

40

20

0.0

ENERGY KWH

What does this data mean?

This shows the total amount of energy used to operate today. This means all energy required to heat, cool, and light the building, store and prepare food, operate technology, and power everything plugged into outlets.



#### Academic Spaces

Space	Description	Qty	Size	Total
E-ACA-I	Pre-S/Pre-K	8	1025	8200
E-ACA-1a	Kindergarten/Grade 1 Classroom	6	1025	6150
E-ACA-1b	Pre-5/Pre-K/Kindergarten/Grade 1 Classroom storage	14	100	1400
E-ACA-2	Early Childhood/Montessori	Optional	1 125	0
E-ACA-3	Pre-S/Pre-K/Kindergarten/Grade 1 Restroom	14	60	840
E-ACA-4	Early Elementarv Resource / Small Grouo Room	0	0	0
E-ACA-5	Outdoor Storaee - Early Childhood	1	0	0
E-ACA-6	Grades 2-5 Classroom	13	900	11700
E-ACA-7	Social Lab	1	1000	1000
E-ACA-8	Discovery Commons Activity Area	1	2000	2000
E-ACA-9	Resource / Small Group Room	6	360	2160
E-ACA-10	Self-Contained Classroom Grades 2-5	1	900	900
E-ACA-10a	Self-Contained Classroom Grades Pre-S - 1	1	1025	1025
E-ACA-10b	Self-Contained Classroom Grades Pre-S - 1 restroom	1	60	60
E-ACA-10c	Self-Contained Classroom Grades Pre-S - 1 storage	1	100	100
E-ACA-11	OT / PT	2	450	900
E-ACA-12	Speech / OT / PT shared storage	2	150	300
E-ACA-13	Independent Area	1	75	75
E-ACA-14	Social Education Coordinator Office	1	150	150
E-ACA-15	Teacher Collaboration Room	3	300	900
E-ACA-16	General classroom storage	1	200	200
E-ACA-16a	Leveled reading storage room	1	300	300
E-ACA-16b	Laptop cart storage	3	75	225
E-ACA-17	Outdoor Classroom	1	0	0
E-ACA-18	Garden	1	Garden Size	0
E-ACA-19	Speech	1	150	150
E-ACA-20	Specials Office/Storaee	1	250	250

Sub-Total 38985.000

### Library Spaces

Space	Description	0	Qty	Size	Total
E-LIB-1	Reading/ Learning/ Circulation Room		1	2800	2800
E-LIB-2	Makerspace		1	500	500
E-LIB-3	Small Group Room		2	150	300
E-LIB-4	Combined Office/ Workroom		1	400	400
E-LIB-5	Conference Room		1	250	250
				Sub-Total	4250

Visual Arts

Space	Description	Qty	Size	Total
E-VA-1	Art Lab	1	1000	1000
E-VA-2	Kiln Room	1	60	60
E-VA-3	Art Storage	1	150	150

### Performing Arts Spaces

Space	Description	Qty	Size	Total
E-PA-1	General Music Room	1	900	900
E-PA-2	General Music Room	1	250	250
			Sub-Total	1150

1150

### Physical Education Spaces

Space	Description	Qty	Size	Total
E-PE-1	Gymnasium	1	4600	4600
E-PE-2	Stage (optional)	1	700	700
E-PE-3	Office	1	225	225
E-PE-4	Gym Storage	1	400	400
E-PE-5	Chair Storage	1	175	175
E-PE-6	Bicycle Storage	1	250	250
E-PE-7	Outdoor Storage	1	0	0
E-PE-8	Playground	2	0	0
			Sub-Total	6350

Sub-Total 

### Admin Spaces

Space	Description	Qty	Size	Total
E-AD-1	Entrance Lobby	Gross up		
E-AD-2	Welcome Center	1	579	579
E-AD-3	Security Area	1	75	75
E-AD-4	Conference Room	1	200	200
E-AD-5	Principal's Office	1	200	200
E-AD-6	Administrative Office	3	150	450
E-AD-7	Administrative Workrooom	1	400	400
E-AD-8	Records Room	1	150	150
E-AD-9	Parent Resource Center	1	200	200
E-AD-10	Counselor's Office	2	150	300
E-AD-11	Student Sevices	2	150	300
E-AD-12	Student Services Conference	1	200	200
E-AD-13	After School Program Office	1	300	300
E-AD-14	Staff Lounge	1	400	400
E-AD-15	Wellness/ Lactation Room	1	150	150
			Sub-Total	3904

### Health Services Spaces

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Space	Description	Qty	Size	Total
E-HS-1	Waiting Area	1	150	150
E-HS-2	Treatment Area	1	150	150
E-HS-3	Cots	1	100	100
E-HS-4	Office	1	100	100
E-HS-5	Storage	1	25	25
E-HS-6	Toilet	1	50	50

"'It is my hope and prayer that what I've tried to do will inspire another generation of young people, and people not so young, to stand up, to speak up, to speak out. To be brave, to be bold and courageous—to make our little planet better for all of us and for those of us who are not born yet.'

It gives me a great privilege with Chancellor Ferebee, the entire West community as well as the District of Columbia, to recommend that West forever be named the John Lewis Elementary School right here in Ward 4. I'm certain that the Congressman will continue to inspire many students right here in Washington, especially the 350 boys and girls who will call West home."

-Muriel Bowser, Mayor of the District of Columbia, relaying comments shared with her by the late Congressman John Lewis, after whom this new school was renamed in honor of his service, legacy, and charge to young people to get into "good trouble"