# 2012 Exhibition of School Planning and Architecture

# Howard D. Woodson STEM High School

Washington, DC
Project of Distinction Award – New Construction
High School
**cox graae** + **spack** architects
SHW Group

# Howard D. Woodson STEM High School

# Community Pride

## Community Environment:

The new HD Woodson STEM High School replaces an original seven-story educational tower that first opened on the site in 1972. Officially named for Howard Dilw•rtx`Woÿ÷ÿon,8an architect and civic leader from Northeast DC, the building was affectionately referred to as the “Tower of Power.”

The school served as a source of community pride for nearly 30 years for its high academic standards and dominance in athletics. Eventually the tower that loomed over the Deanwood neighborhood ultimately became an outsized symbol of the District of Columbia government’s dysfunction. While hai|ed as ÿóÿvate-of-the-art campus when it opened, the building fell into disrepair when money for maintenance didn’t materialize. By the early 2000’s the deteriorating building was slated for demolition to be replaced by a new educational facility.

Through the collective efforts of the District of Columbia Schools (DCPS) and the Office of Public Education Facilities Modernization (OPEFM), a new HD Woodson STEM High School has risen on the site of the former building to serve the needs to Ward 7 students and the surrounding community as they move forward in the 21st century.


# Community Pride

## Community Environment:

The community articulated their desire for a facility that could function independently during off-hours and weekends to provide venues for local cultural arts, recreation and library resource activities. The final program includes gathering spaces that can be accessed and function independently from adjacent academic facilities.

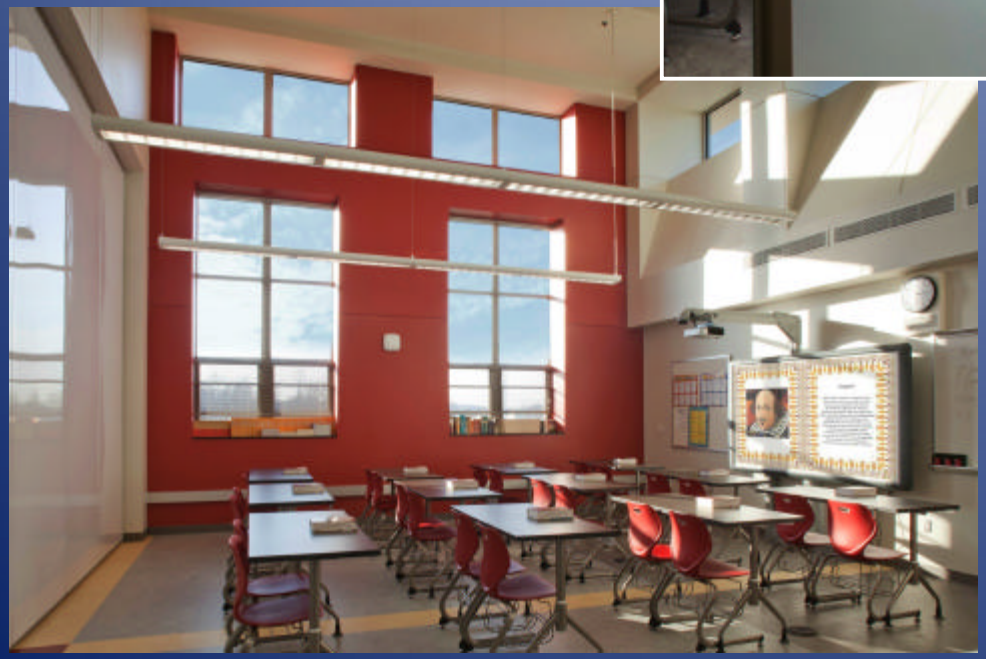
Accessed through its own entrance and lobby / gallery, a state-of-the-art, 1000 seat performing arts venue is supported by an advanced technological infrastructure that supplements theatrical performances, concerts, lectures as well as meetings, cultural festivals and community celebrations. The Woodson Arts Center creates a concentrated arts “hub” of program space dedicated to celebrating and nurturing patrons interests in visual and performing arts.

Similarly, a new natatorium houses an eight-lane, 25-yard indoor pool to address school physical education needs while serving as a neighborhood resource for the broader community. All facilities are designed to integrate seamlessly into the school’s physical plant yet operate as a stand-alone center for after hours community use. Separate entrances for patron drop-off and pedestrian arrival create appropriately graceful access for the surrounding community.

# STEM Design

## Learning Environment:

The school is specifically designed to support a progressive curriculum based on Science, Technology, Engineering and Math (STEM). The two upper floors of the building feature four distinct learning communities, each configured for integrated learning. Each classroom can operate as a collaborative workspace or can be sub-divided into traditionally sized learning units. Supported by an advanced technology infrastructure, each learning community includes an integrated learning suite with laboratories and break-out areas surrounding a forum / gathering space.

# STEM Design

## Learning Environment:

The planning and design team worked with DC Public Schools to delve deep into the foundations of comprehensive STEM learning. Core principles, reinforced through design and program include :

- Integrated courses and curriculum
- Student-driven, hands-on learning
- Informal, collaborative learning spaces
- Interdisciplinary organization
- Increased lab space
- Project-based learning
- 1:1 computing
- Career/community/college connections
- Sustained, collaborative professional learning

DC Public Schools developed HD Woodson as a "STEM Culture" high school, at which a project-based and integrated curriculum would be designed to prepare students for a STEM-based economy. This model for STEM learning, articulated by DCPS in the spring of 2008, is closely echoed in a recent CEFPI article titled "STEM for All" .

The essence of the HD Woodson STEM High School lies in the integration of content and the transformation of learning behaviors, from teacher-directed to student-directed. Collaboration among students and faculty is a key feature of this paradigm. Important was incorporating a high degree of flexibility into the program to allow the school to adapt to new STEM programs in the future.

# Community

## Physical Environment:

HD Woodson STEM High School is located in Washington DC's Ward 7, the city's Northeastern quadrant adjacent to the Maryland state line. It is a predominately African-American community rich in cultural history, often called the back door to the Nation's Capitol because of its nearness to Capitol Hill. But despite its close proximity to the most powerful government in the world, Ward 7 has historically struggled with social and economic issues that afflict many underserved urban neighborhoods. The area exhibits a higher rate of illiteracy than all of the Wards in the District of Columbia. Nearly 24,000 young adults between the ages of 16 to 24, read at or below the 9th grade level and of that number, nearly one-third read at or below the 4th grade level. The unemployment rate for Ward 7 is 19.7 %, which is more than twice the national and DC's rate.

In this context, the new building is oriented toward the adjacent neighborhood and conceived to be a place of hope and pride. Its architectural expression is aspirational, speaking to its role as a community centerpiece. Its form is clearly civic yet it is welcoming, open and transparent. Features of the building express the community's commitment to environmental stewardship and their sense of responsibility to broader global issues. As a place for collaborative learning and intellectual engagement, overlaid with community programs and resources, the HD Woodson STEM High School inspires and motivates the broad spectrum of Ward 7 school and community stakeholders.

Ribbon Cutting Ceremony
August 2011

# Stewardship

## Physical Environment:

DC Public Schools, the community and the design team are committed to the principles of sustainable design and the responsibilities that we all share for environmental stewardship. To that end, the new HD Woodson High School has been designed to achieve LEED Gold certification in accordance with the US Green Building Council's LEED for Schools rating system criteria. Sustainable and high performance features integrated into the building include over 75% of the roof area containing vegetative plantings. Remaining areas contribute to a rainwater harvesting system that stores runoff in cisterns and provides re-cycled gray water to supplement interior plumbing. In addition, the building incorporates high performance glazing and a super-insulated perimeter envelope, daylight harvesting, automated lighting controls, water conserving plumbing fixtures and use of salvaged building materials along with other sustainable design features.

Working in close collaboration with DC Public Schools and the Woodson Community, the design team created an innovative new educational facility that will address the academic needs of Ward 7 far into the future. Through strategic planning, community engagement, will and perseverance, the new facility embodies the vision of an integrated center for academic and community engagement.


# New School Initiatives

## Planning Process:

In November 2007, within the first several months of her appointment, Chancellor Michelle Rhee introduced her New School Initiatives to Renew, Revitalize and Reorganize DCPS.

Rhee's initiatives also recognized that many students in the District needed aggressive and immediate preparation to truly become "college-ready." Accordingly, her plan created a number of instructionally rich and rigorous programs throughout the District, including a grades 6-12 feeder pattern for STEM education in Ward 7. As part of this continuum, HD Woodson High School would become the District's first-ever STEM high school.

However, in 2007, STEM curriculum in the District did not exist in the form Rhee envisioned. The vision for Woodson was for something special – a physical manifestation of the profound changes taking place in public education in this country. Woodson would become the catalyst, and the symbol, for the reinvention of public education in Washington DC.

# School Improvement Teams

## Planning Process:

The design team worked very closely with a School Improvement Team (SIT Team) assigned to oversee design and construction of the new facility. The SIT Team was established in order to participate in the development of the educational specification and the schematic design. The committee was convened through project completion to receive updates, consult on issues that arose during construction and disseminate information to their peers.

The design team met regularly with the SIT team in order to maintain communication and illustrate their influence on the effort. Discussions at key intervals provided opportunities to view progress and share how Stakeholder input shaped the project. Review at a level where decisions could be influenced (rather then “done deal” presentations) reinforced the collaborative spirit of the project.



# Exhibition of School Planning and Architecture Project Data

| Submitting Firm : | cox graae + spack architects |
|---|---|
| Project Role | Architect |
| Project Contact | William Spack, AIA |
| Title | Principal |
| Address | 2909 M Street NW |
| City, State or Province, Country | Washington, DC |
| Phone | 202.965.7070 |

| Joint Partner Firm: | SHW Group |
|---|---|
| Project Role | Associate Architect |
| Project Contact | Derk Jeffrey, AIA |
| Title | Principal |
| Address | 11415 Isaac Newton |
| City, State or Province, Country | Reston, VA |
| Phone | 571.521.7510 |

| Other Firm: | DCPEP – JV of McKissack & McKissack and Brailsford & Dunlavey |
|---|---|
| Project Role | Project Management |
| Project Contact | Robert Hannan |
| Title | Project Manager |
| Address | 2400 E Capitol Street NE |
| City, State or Province, Country | Washington, DC |
| Phone | 202.316.2691 |

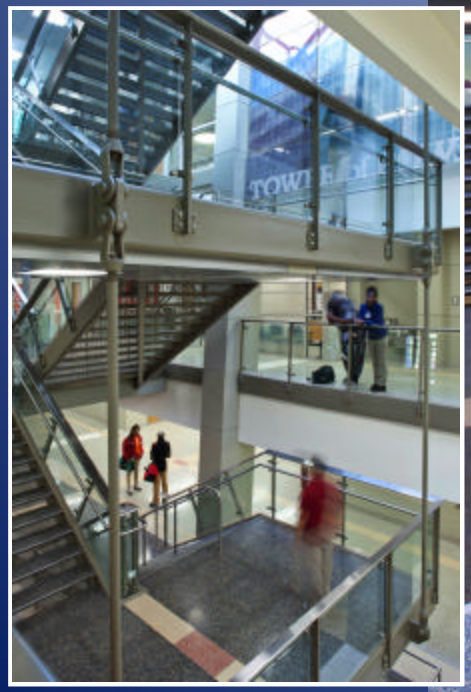
| Construction Firm: | HESS Construction |
|---|---|
| Project Role | GC (modified Design-Build) |
| Project Contact | Steve Groth |
| Title | Project Executive |
| Address | 804 W Diamond Drive, Suite 300 |
| City, State or Province, Country | Gaithersburg, MD |
| Phone | 240.599.4773 |

# Exhibition of School Planning and Architecture Project Details

| | |
|---|---|
| **Project Name** | Howard D. Woodson STEM High School |
| **City** | Washington, DC |
| **State** | Washington, DC |
| **District Name** | District of Columbia Public Schools |
| **Supt/President** | Kaya Henderson, Chancellor |
| **Occupancy Date** | August 2011 |
| **Grades Housed** | 9-12 |
| | |
| **Capacity(Students)** | 900 |
| **Site Size (acres)** | 12.5 acres |
| **Gross Area (sq. ft.)** | 235,000 gsf |
| **Per Occupant(pupil)** | 261 sf / student |
| **gross/net please indicate** | gross |
| | |
| **Design and Build?** | Yes |
| **If yes, Total Cost:** | $93 million |
| **Includes:** | hard and soft costs |
| | |
| **If no,** | |
| **Site Development:** | |
| **Building Construction:** | |
| **Fixed Equipment:** | |
| **Other:** | |
| | |
| **Total:** | |

## Connection

The building is efficiently organized, occupying four floors on its tight urban site. The levels are linked through the concept of "Vertical Main Street", a sky-lit atrium with dramatic open stairs that floods the buildings core with natural light, connects each floor and serves as the primary student access to educational spaces. Walls of this central space are lined with graphic panels that celebrate the themes of Science, Technology, Engineering and Mathematics as well as community culture and pride.

## STEM Learning Spaces

The Building's educational spaces are designed to enhance the fundamental principles of STEM Learning including :

- Collaborative Learning
- Project Based Learning
- Integrated Classrooms
- Integrated Labs
- Transparency
- Flexibility