

TUESDAY, MARCH 16, 2010

Enhancing the *Image* of Institutions: How Will It Drive Long-term Facility Management?

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— I N C L U D I N G —

INTRODUCTIONS_{MH}

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- Michelle Honey, FAIA
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HISTORY OF DC PA

- **DC Public School history** goes back to the establishment of DC as a seat of U.S. government in **1800**
- **First organization** to oversee public education was set up in **1804**
- Over the **next 130 years** a significant number of **public schools were built**

HISTORY OF DC PA

- **Two important historical themes** became significant
 - FIRST, is the *separation of races* into separate schools until the Supreme Court outlawed separate educational facilities in 1954
 - Allocation of *funds between white and black schools* was a serious point of contention—affecting location and design of and funding for each group's schools
 - DC residents recall attendance at racially segregated schools
 - Former black schools —regarded today as a source of pride and reminder of past injustices

HISTORY OF DC PA

- **Two important historical themes** became significant
 - SECOND, theme is *separation of sexes*
 - During the early phase of the system's development--schools were exclusively *male or female*
 - This system existed well into the 20th Century
 - Having NO representation in the US Congress DCPS often felt neglected by the Congress that tended more closely to issues that dealt with constituencies possessing voting powers

HISTORY OF DC _{CD}

- Impact of these 2 historical themes:
 - An **excess of square footage** for even peak enrollment
 - **Too many buildings**, often small and inefficient
 - **Buildings built at many different times** with design and construction techniques unique to that time

HISTORY OF DCPS ISSUES ^{CD}

● DC School Reform

- Public Education Reform Amendment Act of 2007
 - Shifted governance of school system giving Mayor *control/ responsibility*
 - Chancellor reports directly to the Mayor and *drives* all reform initiatives

HISTORY OF DCPS ISSUES ^{CD}

◎ DC School Reform ^(cont'd)

- Separated State education functions from the school system
- Established the Office of the State Superintendent of Education
- Addressed issues related to oversight and accountability of both DCPS and Public Charter Schools

HISTORY OF DCPS ISSUES CD

● DC School Reform (cont'd)

- Reconstituted the local school board as a **State Board of Education**
- Charged with advising the **State Superintendent** on high level state education policies
 - State Academic Standards
 - Policies to comply with Federal rules
 - *No Child Left Behind Act*

HISTORY OF DCPS ISSUES ^{CD}

● DC School Reform ^(cont'd)

- **OPEFM** as a separate agency is charged with **RENOVATING** and **RE-BUILDING** the DCPS inventory
- **OPEFM increased its authority to oversee construction** in an expedited timeframe (as independent contracting authority)
- The creation of OPEFM **enables the Chancellor to focus on teaching and learning**

HISTORY OF DCPS ISSUES CD

◎ DC School Reform (cont'd)

- ICSIC (Interagency Collaboration and Services Integration Commission)
 - Brings together key child - serving agencies under one umbrella
 - Charged with the development of a seamless continuum of care for District children
 - Students, teachers and parents supported to overcome barriers to education—violence, poor health, social and family challenges
 - Two years of academic growth—double-digit gains in proficiency

'PATCH' WORK CULTURE- DIVERSE AGE of BUILDING from 1890's to 1970's, legacy of a segregated school system ^{PA}

- In the absence of an organized and efficient approach and lack of sufficient funding to implement Capital Improvement Projects, DCPS resorted to *patch work* efforts to sustain functionality of schools
 - *The approach often paralleled 'putting out fires' to salvage what was potentially hazardous to life and safety occupants of buildings*
 - The **legacy of the segregated system** and its effects on the general approach of sufficiently funding only those schools in certain areas of the city remained in effect until the 1950's

'PATCH' WORK CULTURE- DIVERSE AGE of BUILDING from 1890's to 1970's, legacy of a segregated school system ^{PA}

- **Patch work** limited attaining the goal of transforming DC public schools into a state-of-the-art learning and teaching facilities
- **OPEFM with its MFP and approach** had to devise a way to quickly and efficiently tackle the challenge of a multi-pronged strategy to improve the physical conditions of DC schools.

'PATCH' WORK CULTURE- DIVERSE AGE of BUILDING CD

- What is it now?

- In 2 years OPEFM achieved *unprecedented*
\$1B in *new school construction*

'PATCH' WORK CULTURE- DIVERSE AGE of BUILDING_{CD}

◎ CONTEXT: the District of Columbia (cont'd)

- Not all Capitol Hill staffers
- Heart of 4th largest MSA in US
- Diversity, strengths and challenges of a major US city
- 'West of River' / 'East of River' divide
- Recent economic resurgence
- Federal oversight, local and State powers combined
- DC Council / Mayor / School Board

'PATCH' WORK CULTURE- DIVERSE AGE of BUILDING _{CD}

◎ **CONTEXT: the District of Columbia** (cont'd)

- **Competition between DCPS and Charters**
- **Oversized and under enrolled**
 - 15M SF
 - 146 Buildings
- **Diverse ages, sizes, architecture**
- **Reputation of underperformance and inefficiencies**
- **Green Building Act of 2006**

'REASON FOR 'ADAPTIVE REUSE' and SUSTAINABLE DESIGN^{CD}

◎ CONTEXT: the District of Columbia (cont'd)

- Existing condition's survey
- Extensive public engagement process
- School by school profiles, sequential approach
- Estimated baseline for CIP
- The Education Reform Act of 2007
- OPEFM / Allen Lew
- Deferred maintenance disaster

'REASON FOR 'ADAPTIVE REUSE' and SUSTAINABLE DESIGN_{CD}

◎ CONTEXT: the District of Columbia (cont'd)

- Modernization Shake-up
- Stop the bleeding; create stabilization
- Closures and consolidations
- Summer Blitzes / Buff and Scrub Program

'REASON FOR 'ADAPTIVE REUSE' and SUSTAINABLE DESIGN_{CD}

◎ CONTEXT: the District of Columbia (cont'd)

- Cutting through the Bureaucracy
 - Independent purchasing and contracting
 - Ask for Forgiveness, Not Permission
- *'Out with the Bad Contractors, In with the Good'*
- Primacy of speed and efficiency

'REASON FOR 'ADAPTIVE REUSE' and SUSTAINABLE DESIGN_{CD}

◎ CONTEXT: the District of Columbia (cont'd)

- Contract Structure
 - Design to CM to Design / Build
- Real Incentives and Penalties
- Use the size of the program as leverage
 - Fire code, health code violations
 - Heating, A/C blitzes
 - Security upgrade
 - Work order backlog

SAMPLE PROJECT MH

○ SAMUEL E. WHEATLEY CAMPUS

1299 Neal St, NE Washington, DC

School

- A three story 86,375 SF school originally constructed between 1908 and 1920
- Work included full renovation and an 18,000 SF addition for the gymnasium/ performance space, music room, food service with kitchen and ancillary facilities as well as demolition to a 1965 wing
- Historic restoration of exterior façade-masonry, windows and slate roof in line with DOI standards



SAMPLE PROJECT MH

SAMUEL E. WHEATLEY CAMPUS (cont'd)

- Constructor recommended ways to economically refurbish the exterior masonry; replace existing mansard roof and windows
- LEED elements were built into the project; ADA access improved
- Increased natural light was improved on the ground floor classrooms along with building security
- Designer lowered the entry which required underpinning the building foundation to accommodate the lowered exterior elevation
- New mechanical system was incorporated in the 19th century structure challenging the project team
 - The new HVAC system / dedicated water source heat pump installed for each classroom and feed from a central hot water heater and chillers
 - Fresh air provided via package roof top energy recovery units (ERU's)
 - Transformer location was re-engineered to suite the new building elevation



SAMPLE PROJECT MH

SAMUEL E. WHEATLEY CAMPUS (cont'd)

- The original centrally located auditorium was preserved and re-furbished as the new Media Center
- The original ornamental plaster proscenium embellishments and vaulted plaster ceilings were restored and incorporated into the new design
- The existing 1903 wood floor construction provided no acoustical separation between floors; after evaluation the project team proposed a sound attenuation system between ground and first as well as first and second floor classrooms; the HVAC ductwork was installed below the acoustical construction to isolate sound transfer between floors
- Upgraded interior finishes including mosaic format terrazzo flooring were installed throughout corridors and entrance halls; unique stripped resilient Marmoleum flooring was installed in all the classrooms. These installation met manufacturers requirements based on an extensive room by room survey of the existing sub floor conditions



SAMPLE PROJECT MH

◎ SAMUEL E. WHEATLEY CAMPUS

Community Center

- Exterior work included masonry and brick veneer; new windows, entry door and storefront
- 7,600 SF center with new terrazzo flooring installed in public spaces
- New carpet, acoustical ceiling, cabinets and countertops installed in offices
- New MEP roof top units

◎ SAMUEL E. WHEATLEY CAMPUS

Community Park

- Demolition of existing Cole Community Center
- Three new 3,600 SF playfields
- Fencing; park lighting; landscaping, paving and park and play equipment installation





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Enhancing the *Image* of Institutions
How will it drive long term Facility Management?



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SAMPLE PROJECT 2 MH

◎ H. D. WOODSON SENIOR HIGH SCHOOL

4650 Benning Rd SE, Washington, DC

- Original 8-story school opened in 1973
- Building was completely demolished in 2009



SAMPLE PROJECT 2 MH



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● H. D. WOODSON SENIOR HIGH SCHOOL

- New 241,000 SF steel structure is designed in three sections—each containing an assembly space with the entrance and administrative offices in the center section; the school will accommodate 900 students
- The lower level houses the competition gym, the natatorium, auxiliary gym and mechanical room
- The learning communities are located at the upper two floors and configured to best support STEM (science, technology, engineering and mathematics) pedagogy

SAMPLE PROJECT 2 MH

● H. D. WOODSON SENIOR HIGH SCHOOL

- Floors are concrete filled metal decking
- Perimeter walls are metal stud, cavity wall construction with pre-cast concrete and gypsum wall board interior finish
- Classroom partitions are high-impact gypsum wall board on metal studs
- Corridor partitions are painted CMU's
- Near the Main Entrance an adolescent Wellness Center is planned
- UDC plans to offer classes at Woodson as well as a Professional Development Center for teachers and administrators
- Separated from the academic wing are Visual and performing Arts and Physical Education
- The pool building is located through the 'Community Entrance'

SAMPLE PROJECT 2 MH

◎ H. D. WOODSON SENIOR HIGH SCHOOL

Woodson is designed to achieve a LEED Gold certification with proposed sustainable, high performance features including:

- 50% of roof area to be vegetative with remaining roof to be Energy Star, highly reflective surface, 'cool roof'
- Roof runoff to be harvested in underground and above ground cisterns to provide 'grey' water for flushing
- High performance glazing and a super-insulated building envelope
- Use of daylight harvesting through the use of abundant natural light
- Automated light control systems
- Reuse/salvage of existing building material

WHAT'S DRIVING CHANGES FOR NEW IMAGE CD

- ◎ The **Fenty Administration** and the School Reform Act
- ◎ **Chancellor Rhee's Initiatives**

THE HISTORY OF WHAT'S DRIVING CHANGES FOR NEW IMAGE? PA

- Desegregated schools and the regrouping of DCPS under OPEFM in 2007
 - School facilities have benefited from a systematic approach to making classrooms ***healthier, efficient, and pleasant environments for learning and teaching***
 - ***Parents, Staff, Alumni, Teachers and the Community have become active participants*** in school improvement
 - ***SIT's are involved in contributing ideas*** in school design and general improvements

THE HISTORY OF WHAT'S DRIVING CHANGES FOR NEW IMAGE? PA

- Desegregated schools and the regrouping of DCPS under OPEFM in 2007 (cont'd)
 - OPEFM has taken a strategic shift to modernize DC schools
 - Projects are divided into three distinct approaches:
 - Major modernization- includes major renovations, additions, or new construction
 - Phase 1 projects- focuses on classrooms to create an environment that is conducive to learning and teaching with work taking place during summer
 - Stabilization- seeks to make schools safer and healthier by tracking the immediate needs –roof repair, life/safety issues and security

THE HISTORY OF WHAT'S DRIVING CHANGES FOR NEW IMAGE? PA

○ Desegregated schools and the regrouping of DCPS under OPEFM in 2007 (cont'd)

- This approach is seen as an important factor in changing the image of the system and being inclusive as well as comprehensive
- Positive results from the recent school improvement efforts resonate with the community
- Support for this type of approach is propelling the stake holders and OPEFM to find new and efficient ways of improving schools in a manner that is economic and
- Takes into account LIFECYCLE costs associated with running a fully modernized school
- Mayor decreed minimum LEED certification to satisfy USGBC goals, the environment and global warming

WHAT'S DRIVING CHANGES FOR NEW IMAGE? CD

- The Creation of OPEFM Projects
- The DC Green Building Act

WHY THIS DIRECTION? PA

- The direction is based on previous efforts to stabilize the system throughout the school district
 - This will help get needed improvements for classrooms as a priority sooner
 - Prioritizing enables the District to bring all schools to a modernized state sooner and with greater reach
 - Particularly elementary schools where students do not rotate classes—the classroom is the central place for learning
 - Classrooms must be comfortable, provide an environment to promote learning, and equipped with adequate educational resources

WHAT STANDARDS? (Classroom performance standards and their contributions to: PA

Lighting-insures quality and natural day lighting

- OPEFM has implemented an aggressive approach to provide all schools with new , efficient windows to maximize the amount of natural lighting that penetrates classrooms
- Guidelines also include very specific lighting requirements for classroom light fixtures to provide a specified amount of light to the desk top

Acoustics- creates a major barrier to individual learning; places additional burden on teachers leading to teacher burn-out

- Effects student achievement (low) ; results in poor student discipline
- Critical factor for those with hearing ,learning or language disabilities

WHAT STANDARDS? (Classroom performance standards and their contributions to: PA

Air Quality – Controls pollutants, HVAC systems, moisture control, commissioning, operation & maintenance

- OPEFM implementing a stabilization program to repair/replace the HVAC system in classrooms to ensure the rooms stay comfortable in any season

Technology

- Design guidelines provide necessary tools to incorporate the latest in technological advances—audio, video, digital media, visual communications, and voice & data communication essential in today's schools

Furnishings

- Furniture type and size must be comfortable and flexible
- Built to functionally be adaptable to future needs
- LEED and Environmentally friendly materials
- Designed not to be visually obstructive and practical
- Consider running power /data from below floor-level conduit
- All furniture as much as possible must be moveable

WHAT WAS THE AFFECT? : CD

Lighting	<ul style="list-style-type: none">▪ Guidelines satisfy USGBC LEED for school guidelines
Acoustics	<ul style="list-style-type: none">▪ Design/detail for use of noise absorbent materials and construction methods
Air Quality	<ul style="list-style-type: none">▪ Lack of effective sound control can contribute to poor classroom acoustics (high noise level or reverberation)
Technology	<ul style="list-style-type: none">▪ OPEFM working closely with city agencies including OCTO to develop design guidelines that designers can use for school projects
Furnishings	<ul style="list-style-type: none">▪ Consider future changes, flexibility/adaptability,▪ Classroom Furniture will continue to undergo innovative design changes as modern technology moves forward

WHAT WAS THE COST? CD

- Major modernization

- Modernization – Average Cost **\$331/SF**
(Based on 7 recently completed schools)
- Phase 1 – Range **\$64/SF to \$104**

- Stabilization

- Cost Varies by item (ex. Roof, Boiler)

DO UPGRADE MATERIALS TRANSLATE TO BETTER SERVICEABILITY;
RELIABILITY? ^{CD}

Revised **Design Guidelines**

- Consistent Use of Materials, Equipment
- Durable, Cleanable Surfaces
- LEED Compliant Energy Efficiency
- Aesthetic Quality – Increases Pride, Discourages Mistreatment

DISCUSS LONG TERM FACILITIES' MAINTENANCE & OPERATIONS CONSIDERATIONS_{CD}

- ⦿ Proper Commissioning
- ⦿ Attached Maintenance Contracts
- ⦿ Extended Warrantees
- ⦿ Energy Impacts Still Being Evaluated
 - Increased efficiency BUT
 - Increased demand (technology, A/C, etc)

WHAT IS THE FACILITIES IMPACT? CD

- Improves academic performance test scores
- Increases enrollment
- Reduces maintenance and operating costs
- Enhances public perception

ENHANCED PUBLIC PERCEPTION PA

- It is NOT enough to *improve* conditions of school facilities, BUT **must enhance public perception**
 - Labor efforts to improve infrastructure has to go HAND-in-HAND with *revised educational specifications*
 - OPEFM must work closely with Chancellor Office in coordinating educational specifications with the school designs
 - Mayor's first priority is to improve learning environments across the District and bring all classrooms up to high quality standards
 - Recent test scores from students at modernized schools identify a correlation between school modernization and infrastructure improvement and student achievements

ENHANCED PUBLIC PERCEPTION PA

- Propelled by this positive energy—trend is to accelerate full scale renovations and school construction
- OPEFM is working with Deputy Mayor of Education and OPM to identify opportunities to combine other public developments with school modernization projects
- An example is the modernization of Stoddard Elementary School – a joint recreation center with the Department of Parks and Recreation— a public private development opportunity that allows the District to leverage resources and assets benefiting all
- OPEFM will maximize these opportunities

IMPROVE PROCESS / PERCEPTION – USING BIM_{MH}

◎ Facilities Management (FM) Model

- Operations and Maintenance
 - As Built Information Model
 - Complete
 - Coordinated
 - Computable
- Model provides interface for remote operating systems management
- Information Sharing
 - Data – rich information exchange in a small file size
 - Original information is secure
 - Conversion and viewing utilities is available at no additional cost

IMPROVE PROCESS / PERCEPTION USING BIM_{MH}

◎ OPERATIONS and MAINTENANCE

BIM can include all data related to the facility

Design	Construction	Operations
Site Info	Contract Document	Personnel Lists
Planning Scenarios	Change orders	Seating Plans
Architectural Program	Shop Drawings	Operating Manuals
Floor Plans	Cost Estimates	Maintenance Records
Space Functions	Procurement Documents	Inspection Records
Area Calculations	Progress Photographs	Electronic 3D Model
Volume Calculations	Invoices	Simulations
Engineering Calculations	Alarm Diagrams	Operations Plans
Specifications	Network Diagrams	Furniture Inventory
	Warranty Data	Disaster Recovery Plans



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IMPROVE PROCESS / PERCEPTION USING BIM_{MH}

◎ Facilities Management (FM) Model

- **Sub contractors** will be required to submit equipment information, warranty information, O&M manuals as required by the Owner, etc. in an excel template
 - Excel sheets will be used to populate the O&M database on FM software.
- **BIM Manager** will link this database with the As Built model to provide the owner with a FM model at the end of the project.
 - To support Owner's full use of the complete As-Built model as a tool for operations and management, the BIM Manager will provide training and a network license of the software to the Owner.
 - Software used to view, manage and extract information from the FM model.

PRODUCTS

Recently Modernized DC Public Schools



THE SCHOOL WITHOUT WALLS
WASHINGTON DC

PRODUCTS

Recently Modernized DC Public Schools

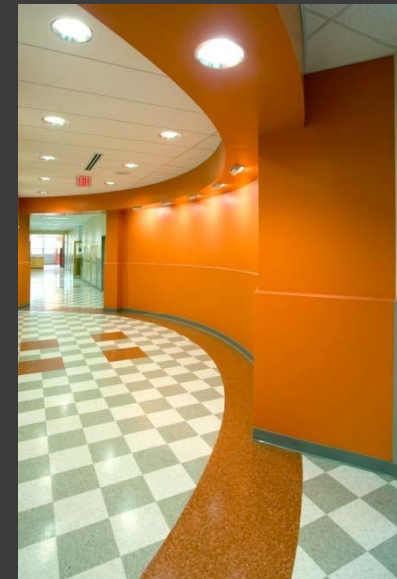


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PRODUCTS

● Recently Modernized DC Public Schools



PRODUCTS

Recently Modernized DC Public Schools



QUESTIONS? CD/PA/ MH

We encourage your questions!

THANK YOU

Our team **thanks you** for your interest in this topic. For questions please contact:

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