



STATE OF MARYLAND  
 PUBLIC SCHOOL CONSTRUCTION PROGRAM  
 200 W. BALTIMORE STREET  
 BALTIMORE, MARYLAND 21201  
 410-767-0617

DAVID G. LEVER  
 EXECUTIVE DIRECTOR

LARRY HOGAN  
 GOVERNOR

INTERAGENCY COMMITTEE ON SCHOOL CONSTRUCTION

JACK R. SMITH, Ph.D.  
 CHAIRPERSON

**BALTIMORE CITY PUBLIC SCHOOLS:  
 ADMINISTRATION OF CAPITAL PROJECTS**

The Interagency Committee on School Construction  
 Update Report to the General Assembly  
 December 1, 2015

**I. BACKGROUND OF THE UPDATE REPORT**

On November 29, 2014 the staff of the Interagency Committee on School Construction (IAC) reported to the IAC on the administration of capital projects in Baltimore City. The IAC staff noted that

*Up to the present, despite periods of improvement since the mid-2000s, it has been the persistent concern of the IAC staff that City Schools has not managed its State-funded capital projects at the same level as other Maryland school systems. ...the critical question with respect to additional State funding, including funding in the FY 2016 Capital Improvement Program (CIP), is whether City Schools will implement a thorough, comprehensive, and well-staffed facility management organization, supported by well-defined and realistic administrative policies and practices.*

*The majority of capital projects that we have observed in the field, and not the occasional project, demonstrate the absence of comprehensive facility management practices. Six persistent areas of facility management are of concern to the IAC staff:*

1. *Prioritization of projects in the capital plan.*
2. *Comprehensiveness of project scopes*
3. *Coordination in the design review process*
4. *Sequencing of projects*
5. *Contract administration<sup>1</sup>*

*Baltimore City Public Schools:  
 IAC Staff Concerns Related to the Administration of Capital Projects  
 November 29, 2014, page 1<sup>2</sup>*

In the *Joint Chairmen’s Report* on the Fiscal 2016 State Operating Budget and State Capital Budget, the IAC was requested to submit by December 15, 2015 “a progress report detailing actions taken by BCPS to maintain the performance management of state-funded projects and protect the investments made using State and local resources. In addition to noting any progress, the report should also identify any additional or continued opportunities for improved operational efficiency or enhanced program management effectiveness.”<sup>3</sup>

<sup>1</sup> “The 6<sup>th</sup> area of concern, Maintenance, has been addressed extensively in other documents, specifically the two IAC agenda items of September 11, 2014 that recommended approval of the Comprehensive Maintenance Plan (CMP) and the Maintenance Performance Metrics....”

<sup>2</sup> Referred to throughout the current report as the “November 29 Report.”

<sup>3</sup> *Joint Chairmen’s Report*, page 17

The following report will summarize changes made in Baltimore City Public Schools (City Schools) since late November 2014 to address the five issues raised by the IAC. The sixth issue, the maintenance of facilities, is addressed in Section III of this *Update Report*.

In broad summary, certain reasonable changes have been initiated in City Schools:

1. Implementation of a process to identify and prioritize projects within the capital improvement program (*Update Report*, page 3);
2. Transfer of 15 Educational Building Supervisor (EBS) positions from the office of the Chief Academic Officer to the office of the Chief Operating Officer, with other organizational changes (*Update Report*, page 13); and
3. Establishing a position of Executive Director of Facilities to lead and coordinate the Facilities Planning, Design and Construction, and Facilities Maintenance and Operations divisions (*Update Report*, page 2).

Through intensive discussions between IAC staff and City Schools staff, concerns continue to be reviewed and evaluated for improvement. Meetings to discuss capital improvement projects are held on a bi-weekly schedule; meetings to discuss maintenance are held weekly; and discussion between the IAC Baltimore City Program Manager and staff of City Schools occurs daily. Based on the reasonable changes that have taken place in the last year, it is expected that this continuous, intensive process of interaction between the IAC staff and the staff of City Schools will over time effect a cultural change in the approach of City Schools to facility planning and maintenance.

During 2015 the focus of the IAC staff, and particularly the Public School Construction Program (PSCP) Baltimore City Program Manager, has been primarily on maintenance issues and secondarily on project administration. During 2016, the focus will shift to detailed attention to the project administration issues, from prioritization and scope-setting through to design coordination and construction administration. Since it is essential for the City Schools Maintenance staff to be involved at every stage of project administration, this change of focus by the IAC staff does not imply a lessening of attention to maintenance issues. From this continuous observation by the PSCP Program Manager of City Schools practices and communication with their staff, a number of recommendations have been developed that are now being implemented.

## **II. ACTIONS RELATED TO FACILITY ADMINISTRATION**

City Schools indicates that the Board and Chief Executive Officer are committed to improving maintenance and operations and that adequate funding is a priority in order to accomplish this objective. On a tour of schools with members of the General Assembly and others on September 15, 2015, Dr. Gregory Thornton, CEO, stated that maintenance had been underfunded for years and renewed his commitment to this vital area of facility administration.

### **A. Executive Director of Facilities**

In the November 29 *Report*, the IAC staff recommended that City Schools adopt the administrative structure that has worked well in most of the large Maryland school systems and a number of the mid-size systems, specifically to establish a position that has oversight and accountability for all of the facility divisions (November 29 *Report*, page 2). In the case of Baltimore City, this would include Facilities Planning, Design and Construction, and Facilities Maintenance and Operations (FM&O). Our experience shows that this position, which reports directly to the Chief Operating Officer or the equivalent position in the school system, is essential to enforce the level of communication, cooperation, and mutual support that can easily be overlooked in a large organization that has multiple heads of divisions.

To correct the areas of facility administration that were identified in the November 29 *Report* and which remain of continuing concern to the IAC, the individual who fills this position must be experienced in multiple branches of facility administration, must have considerable administrative and personnel skills, and must be given the authority to truly manage all aspects of the facility operation, including hiring needed staff members and replacing unproductive workers when necessary. The position must have a budget that is adequate to the task.

In response to the recommendation made by the IAC in the November 29 *Report* and at other times, City School reports that the position of Executive Director of School Facilities is in the process of being established. The IAC staff provided position descriptions from other large Maryland LEAs to the Chief Executive Officer and his staff, and City Schools then developed a position description. At this writing the position has not been advertised nor a candidate identified.

Regrettably, we understand that the budget for this position will be taken from the annual increase of \$3 million that was earmarked for FM&O; this will reduce the amount of funds that are available for preventive maintenance and for the 24 truly new staff positions that are indicated for FY 2016.

The IAC staff places the highest importance on filling this position with a qualified individual, and will continue to monitor the situation closely. In addition, the IAC staff will persist in the view that the budget for this position should not in any way compromise the annual increases that have been designated for FM&O.

## ***B. Facility Administration Concerns***

For each of the five topics noted in the November 29 *Report*, IAC Staff concerns are summarized below, followed by the current status of the issue in City Schools. A sixth item, the time required to encumber projects following State approval, is also discussed below. Maintenance is addressed in Section III of this report.

### **1. Prioritization of Projects in the Capital Plan.**

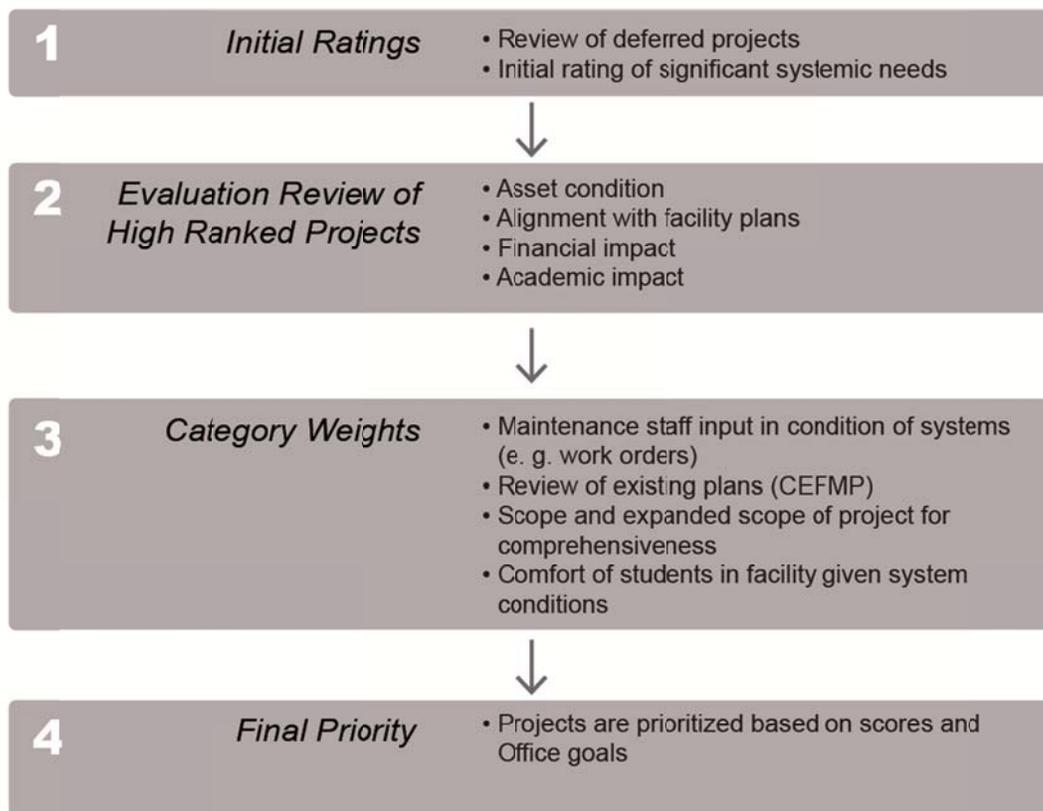
*IAC Staff Concerns* (November 29 *Report*, page 9):

- IAC staff was not able to discern the methodology used by City Schools to establish priorities in the Capital Improvement Program (CIP) or the Aging Schools Program (ASP), the Qualified Zone Academy Bond (QZAB) program, and other state, federal and local programs.
- Both the priority status and the scopes of the systemic renovation projects changed considerably from year to year. Major projects also tended to change in scope and priority status from year to year (e.g. Benjamin Franklin High #239).
- Prioritization appeared to be done on a year-by-year basis rather than based on a long-term view of what each facility needs and how those needs compare to those of other schools.
- City Schools did not include a prioritized list of projects in the annual Comprehensive Maintenance Plan (CMP), reflecting the absence of a detailed facility assessment process or an inventory of assets.

Current Status:

The single most significant change in facility administration made by City Schools in the last year is the development of a method of project identification and prioritization that uses data on the condition of facilities, lists and gives weights to the factors that influence priorities, involves extensive discussion among all stakeholders, and is reported in the annual Capital Improvement Program to support the requests for State funding.

Starting in January 2015, City Schools reports that it used a layered prioritization process to identify and prioritize Capital Improvement Program and other capital requests. The process is shown in the following chart (2016 CMP, page 13):



Per the City Schools methodology, each project was assessed by FM&O from the standpoint of the condition of the existing item, the financial impact of the project, the educational impact of the project, and its relation to other facilities and academic plans. The Contractual Maintenance, Mechanical Services, Engineering, and Energy divisions jointly determined the required scope of the project. The Design and Construction division provided cost estimates and further scope refinements. Input from Design and Construction on special projects was obtained (e.g. the Library/Media Center projects funded in part by the Weinberg Foundation).

The Facilities Team jointly reviewed projects and determined priorities based on goals, comprehensiveness, and/or emergent needs. This process is intended to be an ongoing yearly review of data for existing building conditions and life cycle replacement. This much improved inter-departmental discussion includes managers from the Maintenance Department who merged their collective needs and created a five-year projected plan.

Previously, the process occurred over a 2-3 month period and addressed immediate needs only. FM&O was not provided sufficient time to develop full and accurate project scopes, and there was little discussion between FM&O and the Design and Construction divisions in establishing project scopes or costs. For example, in FY 2016 the Maintenance staff was evidently given only a few days to identify projects, develop their scopes, and prioritize the projects, and submit the list to the central office. Joint discussions or meetings on project priorities and scopes did not occur. Projects were not prioritized in alignment with either the annual academic portfolio review which develops recommendations for educational program changes, or with the 21<sup>st</sup> Century Building Program.

The new process developed by the Facilities Planning division represents a step forward toward an objective method of identifying and prioritizing projects. It establishes a procedure that formalizes the coordinated communication that prevails among the facilities branches in the mid-size and large school systems as they develop their capital programs. The results of the process are shown in the documentation provided for the first time in the FY 2017 CIP in the fall of 2015, which establishes the justification for each project. Although many questions remain at this writing about the scope and eligibility of individual projects in FY 2017 request, the level of documentation provided is better than in previous years.

While it cannot be expected that such a significant change in procedure will immediately eliminate all of the conflicts and anomalies of project prioritization noted in the November 29 *Report*, we believe that if the process is sustained and is supported by school leadership, it will lead to a far more objective, rational capital prioritization process over the next several years. As the new methodology is refined in future years, it will transform a project prioritization process that demonstrated annual fluctuations and unsupported project rationales into one that aligns with the practices of the mid- and large LEAs in Maryland, and with professional standards for project prioritization.

Two measures of the success of this new process will be:

- a. Projects that are listed in priority order in the FY 2017 CIP but which are not funded by the State due to either fiscal constraints or unresolved minor technical issues, will be resubmitted (barring new information) in the same priority order in subsequent CIPs; and
- b. Projects in the CIP will be supported by the Educational Facilities Master Plan and the Comprehensive Maintenance Plan.

*Recommendations:*

It is critical that both communities and leadership at all levels understand that protecting the long-term objectivity and fairness of the prioritization process is more important than the short-term impact of changing priorities to benefit specific areas of the city or specific constituencies.

## **2. Comprehensiveness of Project Scopes**

*IAC Staff Concerns (November 29 Report, page 11):*

- The City Schools practice of carrying out numerous systemic renovation projects in order to touch as many schools as possible led in many instances to installations that were under-scoped and under-funded, and which consequently did not work as specified or were delayed in operation because of the need to supplement the original work. Instances were given of how many projects, the majority of them HVAC, were affected by deficiencies of scoping (*Attachments 2a – 2d*).
- Omissions of scope also impose burdens on the already limited and over-taxed maintenance staff, resulting in premature degradation and failure of the installed systems.
- IAC staff was sufficiently concerned about the scope of the proposed Westport PK-8 #225 and Commodore Rodgers PK-8 #27 Weinberg Library-Media Center projects that it indicated in a letter to the CEO dated August 26, 2014 that payments of project requisitions would not be approved until

the staff was reassured that the project scopes were sufficiently complete to protect the investment. The investment of scarce State and local capital funds into projects that do not perform as required represents a very serious misallocation of resources and a disservice to the building occupants.

Current Status:

Although the IAC staff has observed changes through increases of communication among project stakeholders, there is considerable room for improvement in this area. When the August 26, 2014 letter regarding the Westport PK-8 #225 and Commodore Rodgers PK-8 #27 Library/Media Center projects was issued, these projects were still in the design phase and their scopes could have been adjusted to account for all relevant items; nevertheless, we have found significant scope deficiencies at these projects and at other Library/Media Center projects (detailed concerns regarding these projects are provided in Attachment 1).

Westport ES PK-8 #225

- The correction of malfunctioning HVAC controls and broken equipment were poorly coordinated between the architect, construction manager, and FM&O. Pending repairs that were not incorporated into the original scope of work, temporary air conditioning units were used by the contractor to prevent damage to installed materials and cabinet work. At this writing, repairs have been made to the original equipment, but it does not operate at an optimal level of performance and fails to adequately manage the Media Center temperature.
- Because the uneven subfloor was not corrected, the new flooring is already showing signs of deterioration and will either need to be replaced prematurely or will become a continual maintenance burden.
- Windows identified on the floors above the renovated library area have not been repaired or replaced, presenting the possibility of water penetration to the interior from above.

The Historic Samuel Coleridge-Taylor ES PK-8 #122

- HVAC problems have been reported by the librarian since the opening of the project. Problems that could have been avoided through comprehensive scoping include the lack of temperature control, leaking unit ventilators, steam penetration through the floor tile, and failing steam piping in the crawl space area below the renovation.

In the course of reviewing an FY 2016 roof replacement project at Furley Elementary School #206, the IAC Program Manager identified structural problems that could affect the roof installation and should be corrected prior to installation. This school was funded for a structural renovation in the FY 2005 CIP, but it appears that the scope of that work was incomplete; a structural engineering study is needed in order to identify the complete scope of work that must be undertaken. The much-needed roofing project at this school has been resubmitted in the FY 2017 CIP, but as the structural engineering study has not been undertaken, it is possible that the IAC will not be able to recommend the project for funding.

Recommendations:

- a. In order to prevent equipment and system failures, all facility departments and divisions must be involved in the scoping of projects before the actual design process is initiated. While it is reported that the maintenance divisions are involved in the scoping of the projects that are now under review by the IAC in the FY 2017 CIP, it is the working condition of the installation at project completion that will determine whether the coordination and communication has achieved the appropriate level of thoroughness. The IAC unfortunately has no means other than casual observation to determine if the proposed scopes of these projects are comprehensive enough to ensure that the installed systems will perform as required.
- b. City Schools should study the methodologies used by other school systems to ensure that all stakeholders have input into the development of project scopes and that the input is either

incorporated into the scope or that reasons are given for excluding it. These processes should be formalized through written procedures and a single individual should be responsible for ensuring that the procedures are followed for every approved project.

- c. Thorough assessment of all existing conditions that may affect the project must be performed by both City Schools design and construction staff and by the consultants responsible for the project design.

### **3. Coordinated Development of Project Design**

#### IAC Staff Concerns (November 29 Report, p. 13):

Lack of coordination, particularly between the Maintenance divisions and the design team, was demonstrated in the planning of a number of systemic renovation and other smaller projects. This failure of communication with Maintenance has resulted in buildings that will be difficult to service, have components that are likely to fail prematurely, or will require intensive maintenance attention during their service life.

The lack of coordination appears to run through every phase of capital planning. Prior to 2014, maintenance was rarely brought into project management until the project developed difficulties or was completed. Maintenance requested that maintenance-friendly equipment be specified on some CIP projects, but inappropriate substitutions were made through field decisions by consultants.

#### Current Status:

Failure to involve all stakeholders in design review affects not only the comprehensiveness of project scopes, but also the cost and quality of the construction. Although improvement in communication between the Maintenance and the Design and Construction divisions is reported, IAC staff does not believe that all divisions that are affected by a project, particularly the maintenance personnel, are given a full opportunity to review design documents or that their input is given due weight.

Reasonable changes have been initiated in some areas. Roofing projects in the summer of 2015 were managed more effectively than previously: work on a number of projects was initiated at the start of the summer rather than toward the beginning of the school year, the prequalification process promoted by the IAC and put in place by City Schools led to a noticeably improved quality of work, and unlike in previous projects, personnel from the Contract Maintenance Department were involved in both the scoping and the project management of the projects. Site visits are now required by the architects charged with roof design, and details and maintenance issues are included in designs wherever possible. The IAC Program Manager has attended pre-design meetings and reports a noticeable change, specifically in the roof designs.

These changes in the construction of one of the most crucial type of building systems reflect the improved coordination between the facility divisions and the Purchasing Department and between City Schools and the design consultants. City Schools reports that this improved communication between architects and owners is occurring in all areas of project design. This will remain an area of attention by the IAC staff.

Recommendations:

- a. As with Item 2, Comprehensiveness of Project Scopes, IAC staff believe that written procedures must be developed and that accountability for ensuring thorough review of design documents must reside with a single managing individual.
- b. The new procedure for identifying and prioritizing projects in the capital plan, described above under Section 1, should be expanded so that the Maintenance divisions are formally incorporated into the design of all projects, including those in the CIP and other PSCP-funded programs as well as the 21<sup>st</sup> Century Building Program projects.

#### **4. Sequencing of Projects**

IAC Staff Concerns (November 29 Report, page 15):

- It was noted that lack of attention to sequencing at a number of projects may jeopardize State investments through water penetration or failure of mechanical equipment, including the Library/Media Centers funded by the combination of Weinberg Foundation and State QZAB funds.
- The identification and scheduling of projects seems to occur in reaction to emergency conditions, complaints, community pressures, and funding opportunities, not based on a logical, objective analysis of sequencing requirements that will protect both prior investments and the building occupants.
- In the absence of individual building plans that lay out the sequence of projects appropriate for each building, sequencing of projects appears to be haphazard.

Current Status:

Sequencing of projects is an area of particular concern because of the specific methodology that City Schools uses to carry out projects: rather than undertaking a comprehensive scope of work at a school through renovation, limited renovation, or a coordinated set of systemic renovation projects, City Schools has tended to revisit the same school with different projects over an extended number of years. Unlike in other jurisdictions that are forced into this methodology through fiscal constraints, these series of projects in City Schools facilities are not sequenced or coordinated by a single building plan; as a result, there has been a record of inefficient and wasteful tear-out and damage to previously installed work.

The roof replacement and library project are an example of this ongoing problem. The roof replacement project at Commodore Rodgers PK-8 #27 should have begun in early summer 2015. This school was scheduled for a Library/Media Center project on the store immediately under the roof, work that should not have started until the roof was complete. The consultant project manager and City School staff attempted to process the Purchase Order and Notice to Proceed for the roof project prior to the start of the library renovation, but the necessary paperwork was not processed until the middle of August. Not only did the delay impose the noise and smells of roofing work on the building occupants, but the roofing was not started before the drywall work was begun in the Library/Media Center. Assisted by the good fortune of an exceptionally dry late summer and early autumn, the roofing project is now complete without mishap; see Attachment 1 for more information on this project.

Overall we observe an effort to better coordinate design, construction and procurement in order to improve the sequencing of projects, but only slight improvements have taken place to date. This will be an area of considerable concern to the IAC, as many of the requested FY 2017 CIP projects include HVAC, window and roofing scopes of work that will take place in the same school building; good sequencing is essential if these complex scopes are to be carried out with the least disruption to the building occupants and so as to protect the work at each stage of construction.

These projects represent an improvement in the comprehensiveness of the project scopes, but they also will require that City Schools increase the attention to proper sequencing of construction activities.

If the new CIP process described above is sustained, sequencing of projects will slowly improve as the currently funded projects are completed and new projects are initiated. In order for sequencing to be successful, the Facility Planning, the Design and Construction, and the Procurement Departments must all be involved in establishing how project schedules are established.

Recommendations:

- a. As noted in the November 29 *Report*, City Schools should develop a plan for every building in its portfolio. Such a plan would identify projects and delineate an objective sequencing schedule for the projects. Recognizing the magnitude of the task, we recommend that City Schools begin by developing building plans for each of the projects that will be submitted in the FY 2018 and future CIPs.
- b. Formal procedures should be developed to ensure the complete coordination and communication between the Facilities divisions and Purchasing to ensure that projects are procured and initiated in a timely way that will support the proper sequencing of operations.
- c. To the greatest extent possible, projects of different scopes at the same facility should be consolidated into single, coordinated scopes of work. The IAC encourages this approach through its Limited Renovation project category as well as through two new systemic renovation changes, the Ceiling-and-Above and the Building Envelope project categories.

## **5. Contract Administration**

IAC Staff Concerns (November 29 *Report*, page 16):

- During IAC maintenance inspections, several instances were noted where the contractors had been paid in full for projects even though the work was incomplete or deficient, resulting in costs to the school system to correct the work and/or on-going maintenance problems. The corrections either did not occur or took an extremely long time to be made, as witnessed by repeated observation of the same deficiency on re-inspection of the same school.
- There is insufficient oversight of contracted work resulting from a lack of staff in the Division of Design and Construction: at 10 staff members, City Schools is substantially below the staffing levels of Montgomery County Public Schools and Baltimore County Public Schools, school systems with comparable numbers of facilities and projects.
- To compensate, City Schools contracts with outside vendors to manage projects; however, it appears to have placed restrictions on the authority of the vendors to truly manage projects on the owner's behalf. These contracts themselves do not appear to be thoroughly administered by knowledgeable LEA staff.
- There is an apparent lack of training on the part of City Schools designers and project managers about basic aspects of contract administration, leading to poor installations, late completion, or unsafe conditions on site.

Current Status:

Improvement has been seen in the administration of roofing projects through implementation of prequalification procedures, requirement for the architects to visit the sites, and assignment of knowledgeable City Schools staff to project administration tasks. However, the results are inconsistent across projects of the same type and projects of different types.

Contract administration will not be at the level of quality expected in other LEAs until the project management staff is increased with a larger number of very qualified individuals.

A change in project management of roofing projects occurred in 2015 with the use of qualified in-house staff for project management and reduced use of consultants for inspection and management services. Owner representation, the use of contractor pre-qualifications, and the owner's on-site presence resulted in cost savings and on-time delivery of the projects in a number of cases. Better communication and coordination between construction activities and school administration staff was observed during progress review meetings and project site visits. Examples include Grove Park PK-8 #224, Franklin Square PK-8 #95, Johnston Square PK-8 #16, Eutaw Marshburn Elementary School #11, George G. Kelson PK-8 #157, and Callaway Elementary School #251.

The pattern, however, is very inconsistent: one project, the Gilmor Elementary School #107 2013 QZAB Library, is still not 100% complete although construction began in January 2015. This compares poorly to the Library/Media Center projects supported by the Weinberg Foundation at Commodore Rodgers PK-8 #027 and Westport PK-8 #225, both of which began construction in June 2015 at the end of the 2014-2015 school year and were substantially complete by the opening of school in August 2015 (noting the deficiencies in scope described in Section 1 above and in Attachment 1).

Although contract administration appears to have improved for roofing projects, much more is required so that every project type and every project receives full attention from City Schools staff. This requirement applies irrespective of whether the project is managed directly by City Schools or is managed through a consultant. If in-house staff can be developed and employed to manage projects in the future, the area of contract administration will continue to show improvement. It will be advantageous for City Schools to continue to use outside consultants only if school system staff members assume a very active and continuous presence in the projects.

Recommendations:

We recommend that just as the Board of School Commissioners has shown its commitment to maintenance by increasing the budget for FM&O, it must increase the budget for project management staff within the division of Design and Construction. Training of project managers is essential, as well as establishing measures of accountability for performance (percentage of change orders, adherence to schedule, etc.)

**Time Required for Encumbrance of Approved Projects**

One item of concern was not reported on in the November 29 *Report*, the time required for City Schools to encumber projects once they had been approved by the Board of Public Works or the IAC. Repeatedly, a significant number of projects were not encumbered as the two-year limit required under statute was approached. The result was either a rush to award the contracts just days before the annual May 31 deadline, or the cancellation of the projects so that the State funds could remain with City Schools. The net effect was both delay in improving the schools and an exceptionally high level of reverted funds (as much as \$28 million at one point in 2015).

In November 2013 this issue was discussed with the C.O.O. and his staff, resulting in a change of procedure to allow projects to move forward more quickly into design following approval. By report from City Schools, the results have been positive: a majority of FY 2015 approved projects are now either encumbered or will be well before the May 31, 2016 deadline, and projects approved in the FY 2016 CIP are under design. The goal is to clear the entire backlog of previously approved projects so that projects approved in the FY 2017 and future CIPs will be designed and procured as quickly as possible after approval.

In early 2014 the PSCP established a tracking method that will allow the progress in project encumbrances to be reported on automatically. This system requires regular input from City Schools staff; the process of inputting the necessary data has only recently begun. Pending completion of the input process, the IAC's report on progress in this area will depend on summary reports provided by City Schools at bi-weekly meetings with the PSCP Program Manager.

## **C. MAINTENANCE**

On October 26, 2015 City Schools submitted its annual Comprehensive Maintenance Plan (CMP). The 2016 CMP expands on and updates the CMP that was approved by the Board of School Commissioners and the IAC in August and September 2014, respectively. IAC staff is currently reviewing the CMP and will provide detailed comments to the IAC and to City Schools. The remarks below touch on the highlights of the 2016 CMP.

### **1. Facilities, Maintenance and Operations (FM&O) Budget** (CMP, page 17 ff)

As evidence of the Board of School Commissioner's commitment to maintenance, the FY 2015 operating budget included the first allocation of \$3.0 million, increasing the annual budget of the Facilities, Maintenance and Operations (FM&O) division by \$27.0 over nine years to sustain required maintenance, repair and renewal. With annual increases of \$3 million, the annual FM&O budget is projected to increase from \$15.5 million in FY 2014 to \$31.3 million in FY 2019. For FY 2016, City Schools' CEO and Board have exceeded the \$3 million annual target by increasing the FM&O budget by \$7.8 million above the fiscal 2014 allocation.

This financial commitment will reportedly allow the repair regions to be increased from 3 to 10, increase preventive maintenance activities across the system, and permit more than 39 full time positions for repairs and maintenance to be filled. With the proposed reduction of building plant area from 17.6 million square feet in FY 2015 to 16.1 million square feet in FY 2019, the budget will increase from \$1.55/sf/year to \$1.94/sf/year (2016 CMP, page 17). City Schools indicates that this figure will be adequate to fund preventive maintenance and unscheduled maintenance by FY 2019.

#### **Evaluation**

The MOU requires that "City Schools' annual maintenance budget shall include funds sufficient to achieve progress toward the attainment of the [Maintenance Performance] Metrics" (Section 11.D.6). A discussion of the Metrics is provided below; in general, we see that a number of Metrics are trending in the right direction, but in the absence of a computerized maintenance management system (CMMS) that can capture all of the Metrics outlined in the MOU (pages 28 and 29) as well as in the approved CMP, it is difficult to assess whether the progress is sufficient.

The adequacy of the City Schools budget for FM&O must be further examined. The CMP includes a comparison of the City Schools FY 2016 budget of \$1.33/sf to those of Anne Arundel County (\$1.30/sf) and Baltimore County (\$1.81/sf) (CMP, page 19). Maintenance budgets are notoriously difficult to compare on a simple \$ / square foot basis, since different school systems incorporate varying elements into their calculations; for example, one school system might include gravel and salt needed for winter parking lot maintenance in the Maintenance budget while another school system might place this budget item in another area altogether, e.g. under Grounds. To determine if the City Schools projected budget of \$1.94 is adequate, a line-by-line analysis of the components of the budget figures of the three LEAs would be required.

Regarding the increase of FM&O staffing, it must be noted that 15 of the 39 positions already existed. These are the Educational Building Supervisors who previously reported to the Chief Academic Officer and were paid from the CAO's budget line, but now report to the Chief Operating Officer and are paid from the \$3 million increase in FM&O budget; the CAO's budget for this item did not transfer to the COO with the positions. This means that in reality the new budget will support 24 new positions, not 39.

We also note that the projected increase in the budget square foot parameter, similarly to improvements in other parameters that depend on the total square footage (e.g. reduction of square foot/FTE), is predicated on the closure of the school buildings listed in Exhibit 6 of the MOU. An increase of system-wide utilization is a condition specified in the MOU, which along with improvement in the Metrics must be considered by the IAC in developing recommendations for the approval of 21<sup>st</sup> Century Building Program projects and projects in the annual CIP. An improvement in utilization does not automatically translate to a reduced square footage and therefore to the improvements of efficiency that are implicit in all per-square footage measurements. Improvement of utilization can occur, for example, when schools are removed from service as educational facilities, but if these schools remain in the inventory, they are still required to be maintained and operated by City Schools. From the perspective of maintenance efficiency, the efficiency gains only occur when the closed facilities have been surplused to the City government for other purposes, so that they are no longer the responsibility of City Schools for maintenance and operations.

## **2. Computerized Maintenance Management System (CMMS) (CMP, page 35, 36)**

The *Memorandum of Understanding for the Construction and Revitalization of Baltimore City Public Schools* (MOU), dated October 16, 2013, requires that City Schools report on

*Implementation of a CMMS system:*

- a. *In Replacement and Renovations, including all necessary staffing and computer resources.*
- b. *In all other School Buildings, as budget and staffing permit.*
- c. *Ratio of scheduled to unscheduled maintenance work orders.*
- d. *Percentage of major building systems operating within industry age standards.*
- e. *Deferred maintenance backlog (as percentage of total building plant value).*
- f. *Other metrics, as agreed upon between City Schools and the IAC.*

*MOU, page 29*

City Schools states that the CMMS will provide the necessary tools to manage preventive maintenance, physical plant assets, and storeroom inventory and utilities; these tools will be new to City Schools. It will also provide data by which performance measures will be used to hold the entire FM&O organization accountable to continuous improvement.

Two years after approval of the MOU, the CMMS has not been procured. As described by City Schools, the Request for Proposal (RFP) for the CMMS was issued in August 2014. The evaluation process commenced and a vendor was selected. The apparent low bidder was notified on May 7, 2015 and was required to submit MBE Forms C and D. Upon receipt of the MBE forms, City Schools' MBE office determined that the vendor was not compliant with the requirements of the regulations. In consultation with Legal Counsel and the MBE office, City Schools issued a request for a second Best and Final Offer. The vendor submitted a lower cost proposal and complied with the MBE requirements. In July 2015 City Schools shared the results with MSA; this prompted subsequent conversations with the vendor, during which it became apparent that the vendor had reduced the scope of services from their original proposal. The vendor was subsequently rejected and as a result, the City Schools Chief Operating Officer and the Executive Director of 21<sup>st</sup> Century Buildings are now prepared to discuss options with MSA to complete procurement of the CMMS.

### Evaluation

The delay in the CMMS procurement has held up making use of the asset inventory and improving the capturing of key data which affects work orders as well as and future planning needs. This delay in procurement has in turn caused a delay in the school system's ability to develop and report on specific approved MOU Metrics. The results for certain Metrics, which can be obtained from the current work-order system and other sources, are reported on in Section III.6 of this report. However, full reporting on Metrics cannot be carried out until the CMMS is procured, the system is populated with accurate inventory information, and data is extracted for the metrics. To appreciate the magnitude of the task, Frederick County Public Schools with approximately 60 school facilities required three years to populate and effectively operate its new CMMS system beginning in 2013. By contrast, City Schools currently has 163 campuses and will still have 137 campuses if all schools identified for closure in Exhibit 6 of the MOU are in fact surplus to the City government.

The delay in procuring and implementing the CMMS will affect two requirements of the MOU:

- The required reporting by City Schools to the STAT Committee on the maintenance performance metrics (MOU Section 11.E);
- The IAC's evaluation of progress toward achieving the Maintenance Performance Metrics as a factor in "the review of the 10-Year Plan Projects for approval and the recommended approval of future CIP projects" (MOU Section 11.D.7). Moreover, the release of funds by the Maryland Stadium Authority will be dependent, among other factors, on the IAC assessment that the annual CMP demonstrates acceptable progress (Section 11.F.1).

### **3. Building Maintenance Plan (BMP)** (CMP, page 17)

The MOU requires that City Schools develop a Building Maintenance Plan (BMP) for replacement schools, renovated schools, and science classroom renovations (Section 11.C). The BMP must include at a minimum the staffing plan for the building, the required budget, and custodial requirements.

City Schools presented to the Public School Construction Program a BMP for the newly constructed Waverly Elementary School. The Waverly Building Maintenance plan will be used as a template for new schools that City Schools will build through State CIP funds and the 23 to 28 new and renovated schools in the 21<sup>st</sup> Century Building Program. At Waverly, an inventory of the items requiring scheduled maintenance were recorded and entered into a spreadsheet, including but not limited to HVAC equipment, generator, lighting, doors and the elevator.

### Evaluation

IAC staff is concerned that even if the BMP is fully developed, it must be put into practice by trained City Schools staff members. Like other school systems, City Schools faces the challenge of finding skilled building engineers capable of managing the complex mechanical systems that are required to meet current energy and ventilation standards. In the case of Baltimore City Public Schools these difficulties are compounded because its building engineers are responsible for multiple facilities; in most school systems in Maryland, building engineers are responsible for one or at most two facilities. Human resources are thus stretched very thin. This is an area of considerable urgency for the IAC.

### **4. Organization and Staffing** (CMP, page 19 ff)

The biggest change in the Facilities Maintenance and Operations (FM&O) Department is the last year was the transition of Educational Building Supervisors (EBS) from the office of the Chief Academic Officer to the office of the Chief Operating Officer. The EBSs report directly to the Director of Building Maintenance. The EBS "is responsible for day-to-day supervision and reporting of facility maintenance needs of City Schools' facilities... The EBS is the designated point of contact for all facility related matters on the school side" (CMP, page 26)

This organizational strategy, recommended in the 2014 approved CMP in order for FM&O to better manage the entire portfolio of City Schools' buildings, was initiated as of July 1, 2015 for FY 2016. The reassignment of the EBSs from the CAO's School Support Networks to FM&O was aligned with two structural changes, the establishment of 10 Geographic School Communities in place of the previous three regions, and creation of a Preventive Maintenance Manager position.

These changes resulted in a reduction in square footage per FTE of 177,348 in FY 2014 to 127,480 square feet in FY 2016 for FM&O's entire staff (including maintenance, repairs, management and support staff, but not including the Building Maintenance and Inspections or Grounds personnel). The increase from 3 to 10 maintenance and repair regions resulted in a decrease of average schools per team from 53 to 16, and average square footage per team from 5.8 million to 1.6 million. The EBS staff is required to visit each school in their assigned area at least once per month. On the model used successfully by Frederick County Public Schools, each EBS has received training through the International Facility Management Association (IFMA), helping to provide necessary skills to effectively manage their assigned schools.

The 21st Century Schools will present new challenges for existing City School staff to manage new high efficiency equipment and will require additional training to ensure equipment is maintained as required in order to prevent early failure. The transfer of the EBSs to the office of the COO should bring much needed accountability to maintenance reporting and management. However, as noted above, the transfer of the positions from the office of the CAO to the office of the COO was not accompanied by a transfer of the budget line that supported these positions; as a result, the EBSs within the COO's office must be funded from the \$3 million annual increase, further diminishing the reach of these funds to address preventive maintenance and routine maintenance activities.

Filling existing and new staff positions remains a challenge for City Schools. FM&O continues to work with the Human Capital (HC) Department to rewrite position descriptions and advertise for qualified candidates. From FY 2014 to 2019 the CMP indicates that FM&O staff will increase from 98 to 187 FTEs. FM&O budgeted in FY 2015 for 11 new FTEs and for 28 new FTEs in FY 2016. If all of these positions are filled, the square footage for FM&O's entire staff will be reduced from 177,348 sf per FTE to 86,295 sf per FTE in FY 2016 (CMP, page 23).

## **5. Maintenance Challenges** (CMP, page 12)

The following are reported to be challenges faced by the City Schools Maintenance Departments. While most of Maryland's school systems face many of these same challenges, the combination of an aged infrastructure, historic underfunding, lack of staff, and social/community impacts gives them a particular urgency in the case of Baltimore City schools. The statements below are taken from the 2016 CMP (page 12).

- *Air Conditioning:* Use of portable air conditioning units have increased dramatically, requiring significant resources devoted to operating and maintaining these generally inefficient units in good working order.
- *Breaking and Entry Repairs:* This requires additional maintenance to correct damage. Work typically includes repairs to windows, doors and affected equipment within the facility.
- *Emergency Repairs:* City Schools' portfolio is comprised of a large number of older structures. Maintenance to fix unforeseen breakdowns or failures of critical building systems and equipment is a significant component of FM&O's workload. These types of repairs typically include full or temporary repairs to critical safety, mechanical, plumbing, electrical and security systems.

- *Fire Repairs*: Maintenance to fully or temporarily repair damage caused by fire.
- *Technology Infrastructure*: FM&O is increasingly required to respond to issues caused by insufficient technology infrastructure, which stem from dramatically increased power associated with HVAC and computer capacity requirements.
- *Toxic Materials*: Schools occasionally experience problems with toxic materials such as asbestos. When these issues occur unexpectedly and cleanup is required, FM&O must respond in a timely fashion in order to maintain the safe functioning of the facility.
- *Vandalism and Security Related Repairs*: This includes labor and materials related to restoring or temporarily fixing property that was damaged due to the intentional vandalism of school property of all kinds. Vandalism may also require the installation of additional prevention mechanisms that will add to the long-term equipment maintenance duties of FM&O.
- *Infrastructure Degradation Outside City Schools Boundaries*: Issues that occur within the school property line as the result of infrastructure failures that happen outside the school.

**6. Maintenance Performance Metrics (CMP, page 62ff)**

The MOU requires that the City Schools CMP contain certain Maintenance Performance Metrics that are defined in Section 11.E. City Schools is to assess the Metrics annually and report on the progress toward attainment of the Metrics in the annual CMP submission (Section 11.D.5). The MOU states that “[p]rogress toward attainment of the Metrics shall be a factor considered by the IAC in the review of the 10-Year Plan Projects for approval and the recommended approval of future CIP projects....” (Section 11.D.7). In the following chart included in the 2016 CMP submission, City Schools reports on the progress made between FY 2014 and FY 2015 in a number of Metrics (2016 CMP, page 9):

<b>Facility, Maintenance and Operation's Key Performance Indicators as of June 30, 2015</b>			
<b>Operations</b>	<b>2015</b>	<b>2014</b>	<b>2015 vs. 2014</b>
Percent of Work Orders Greater than 60 days	28%	41%	-14%
Percent of Open Work Orders Greater than 60 days	14%	27%	-13%
Percent of Open Work orders	6%	5%	1%
Average Age of Open Work Orders in Days	114.6	164.2	(49.58)
Average Days to Close Work Orders	19.4	22.8	(3.39)
Average Hours to Complete Work Orders	2.4	2.8	(0.37)
Average Work Orders Completed Per Day	215.7	186.2	29.45
Completed Work Orders within 15 Days	39,449	33,990	5,459
Percentage	74%	74%	0%
Completed Work Orders within 15 to 30	5,122	4,079	1,043
Percentage	10%	9%	1%
Completed Work Orders Over 30 Days	8,483	8,120	363
Percentage	16%	18%	-2%
Total Completed Work Orders	53,054	46,189	6,865

The chart is based on the current CMMS, which will be replaced by the proposed CMMS described above. The chart shows that there has been progress from FY 2014 to FY 2015 in all areas except one, a modest increase in the percent of open work orders. The total number of work orders has increased by 6,865, which in itself indicates that there is more attention to maintenance. In combination with the increase of staffing, the acquisition and populating of the proposed CMMS with building inventory information is expected to increase the total number of annual maintenance work orders very significantly. The trends show that the percentage of work orders completed in less than 30 days has increased from 83% to 84% and that the percentage of work orders completed in more than 30 days has decreased from 18% to 16%.

These trend-lines are therefore moving in the right direction. It is hoped that with the reorganization into 10 regional shops, the new preventive maintenance staff member, the direct accountability of the EBSs to the C.O.O., the implementation of a more robust CMMS, and the increase of budget for FM&O, the movement toward more rapid resolution of work orders will accelerate.

**BALTIMORE CITY PUBLIC SCHOOLS  
ADMINISTRATION OF CAPITAL PROJECTS**

**WEINBERG LIBRARY / MEDIA CENTER PROJECTS: IAC ASSESSMENT**

Based on site visits by Mr. William Levy, Public School Construction Program Manager for Baltimore City Public Schools

**Westport PK-8 #225 – Site inspection 10-28-15**

- Windows on the 2<sup>nd</sup> and 3<sup>rd</sup> floor above the Media Center were identified during the initial scoping of the project as failing and leaking, seals were not weather tight, Plexiglas was not seated, and hardware was broken. These windows were to be repaired similarly to the work done in the new Media Center. To date no work has been completed – the library was substantially completed and occupied at the beginning of this school year. Concerns remain about water penetration that could damage the Library / Media Center.

Exterior 2<sup>nd</sup> Floor



2<sup>nd</sup> Floor Cafeteria



2<sup>nd</sup> Floor Sash

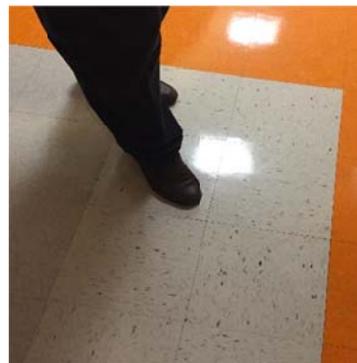


- The areas and classrooms renovated to house the new Media Center had several different existing types of subflooring and finish floors. As a result of not removing the existing subflooring and installing new subflooring below the finish flooring, the VCT is beginning to fail and the new underlayment sheet seams are moving, with visible seams telegraphing through the finish flooring. Replacement of some tiles is already required and more will be necessary in the near future. During the construction phase of the project the IAC Program Manager asked the site superintendent if the subflooring would be removed as an alternate, and it was reported to be not possible because of the tight construction completion schedule.

Punctured VCT Tile



Moving Underlayment Seam



- The HVAC system serving the Media Center was to be analyzed, evaluated and repaired prior to project completion, and was reported to be repaired as necessary to condition the renovated space. However, in conversation with the librarian at the time of this site visit, it was reported that the air conditioning worked well at the opening of school, but when the change-over occurred for heating in mid-October it was reported to be “so hot she had to open the window due to excessive temperature.” A service ticket was called in and the reported resolution was to turn off the blower to control the temperature. At this time it is unknown whether the control issue has been resolved. The excessive heat is not only uncomfortable for the occupants, but may contribute to problems with the building finishes.

Repaired AHU Blower



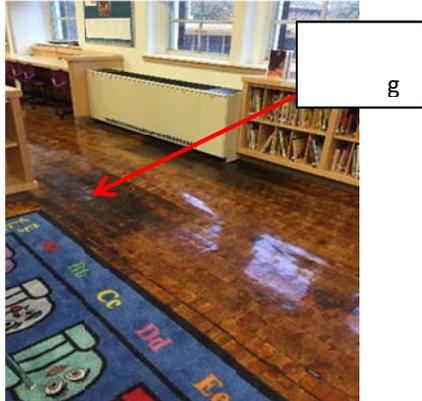
AHU Control Wiring



### The Historic Samuel Coleridge-Taylor Elementary #122 – Site visit 10-27-15

- There have been reported issues with the unit ventilators since the completion of the renovated space. Initially it was suspected that one unit damper was not operating properly and repairs were made. There are areas of the finished hardwood flooring that appear to be moving, raised or warped from possible leaking from the older piping running under the Media Center. The hardwood is original to Historic Samuel Taylor and was salvaged as part of the renovation project. At the time of the inspection, the hardwood flooring had a sizable hump (6” to 8” high by approximately 6’ in length) in front of the unit ventilator furthest from the entrance. The hardwood flooring is noticeably discolored in two areas, indicating this problem has existed for a prolonged period of time. The librarian reported a contractor had been on site and suspected a pierced condensation line had caused the movement in the hardwood flooring. Inspection of the flooring in front of both unit ventilators reveals movement as well as the pronounced raising of the finished flooring. Further inspection by the IAC Program Manager in the crawl space under the library area showed leaking at the piping of the new unit ventilator that could be inspected.

Problematic Unit Ventilator and raised floor



Unit Ventilator leaking pipes in crawl space



Large hump



Opening seam



Moving flooring



- The older piping under the Media Center has caused several other issues in the new flooring. The librarian reported that steam visibly penetrated the seams of the VCT tile during the first year of operation and the floor was extremely hot on the surface. This has been reported to have been resolved, but it needs to be determined whether possible damage has occurred to the adhesion of the VCT tile and underlayment.

VCT area of steam leakage



Separated seam in VCT



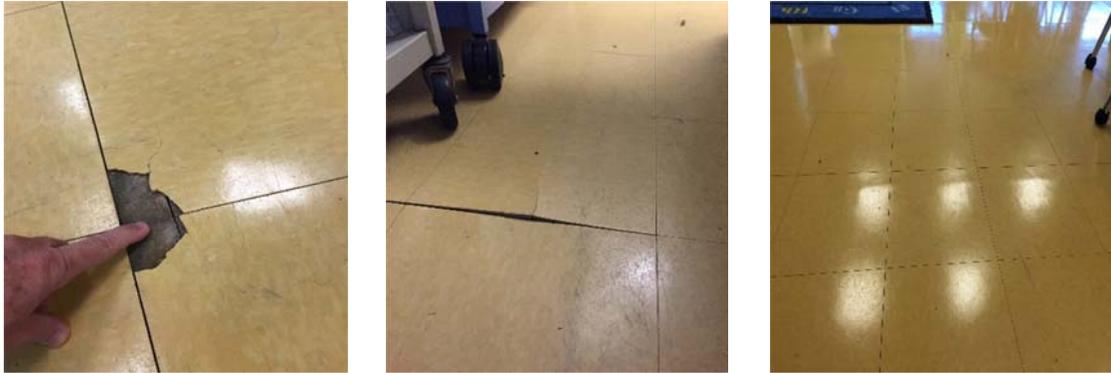
- There is damage to the finish wall surface from a leak reported to be from the storey above the new finished Media Center. The leaking is suspected to be from a drinking water station that has no protection to prevent water penetration to the finished area below.



**Arlington PK-8 #234\_**– Site visit 10-30-15

- This floor demonstrates some serious conditions for a project that is only two years old. There are numerous areas in the VCT finished flooring and underlayment that are either damaged or appear not to have been installed correctly. It is hard to determine whether the installation of the underlayment was done incorrectly or other conditions are causing this failure. Areas throughout the Media Center finished flooring are in various states of failure. Broken tiles, telegraphing seams, and movement of the underlayment are very noticeable in many areas.





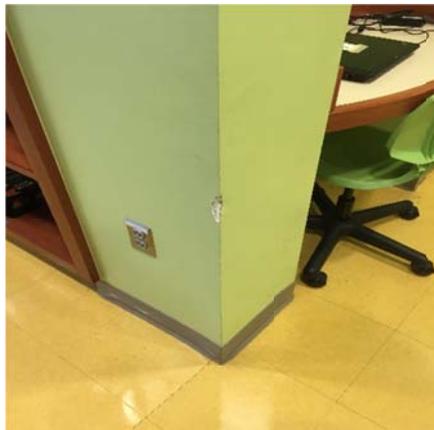
- There is an area above the Librarian's desk where apparent water penetration in the drywall has caused flaking and deterioration to the finished surface. It is difficult to determine the source of the leaking, but it seems to have come from the exterior of the existing window head or steel lintel.



- There is a missing and stained ceiling tile in the room off of the main area of the Media Center. In a site visit last year, the leak was reported to be in a domestic water line and was scheduled for repair to prevent possible damage to adjacent areas. At the visit of October 30, 2015 the Librarian reported that the leak had been inspected by City Schools Maintenance personnel and was found to be from penetrations through a roof pitch pocket where the lines connect to the HVAC units. The deficiency is reported to have been corrected at this writing. The interior AHU is located in the rear equipment room, which is poorly organized with various supplies stored on top of the HVAC unit. Clearance in front of all equipment is required to be maintained at a 3' minimum distance per code.



- The halogen light bulbs in the circular track fixture were reported to burn out regularly and have not been replaced for an unreported period of time.
- No corner guards were installed to protect metal drywall corner beads from damage by the movement of heavy furniture.

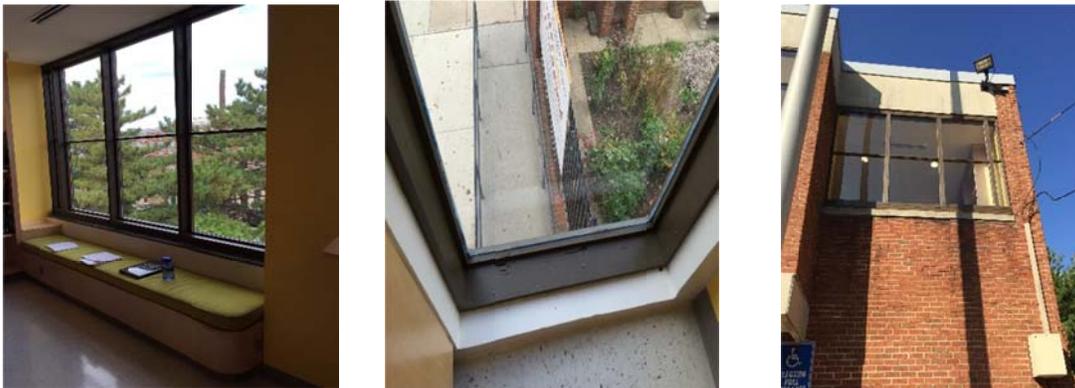


**Commodore John Rodgers PK-8 #027 – Site visit 10-30-15**

- The roof replacement work over the Media Center appears to be substantially complete, but the IAC Program Manager could not confirm if the skylights and covers were completed at this time. The timing of the roofing replacement project with the Purchase Order and Notice to Proceed was not well coordinated by the City Schools Procurement Department so that the roofing work would be completed before the Media Center was completed. This work is now complete, but we were concerned that the Library / Media Center would be vulnerable to both construction damage from the roof work and to water penetration while the work was underway.



- The front exterior window units have not been installed and temporary units are in the openings. It was undetermined at the time of the inspection why the finished units had not been installed.



- The VCT flooring seems to be shrinking and expanding, possibly as a result of changes in the environment due to the upgraded insulation and upgraded air conditioning of the Media Center. The underlayment appears to be telegraphing through the VCT tile and peaking at the seams where the underlayment units are butted together. The tiles are raised in areas throughout the flooring, which will present maintenance issues in the near future and require possible replacement.





**BALTIMORE CITY PUBLIC SCHOOLS:  
ADMINISTRATION OF CAPITAL PROJECTS**

**MAINTENANCE PERFORMANCE METRICS**

Source: Baltimore City Public Schools 2016 Comprehensive Maintenance Plan

**Objective SD 1:** Reduce the number of vacancies in FM&O by June 30, 2015.

**Metric SD 1:** Fill the 5 FM&O vacant and 15 newly created positions by June 30, 2015. The Comprehensive Maintenance Plan, approved by City Schools' Board of Commissioners on August 12, 2014, contains the hiring and staffing plan on pages 19 and 20.

SM	Facility, Maintenance and Operations Core Outcomes: Fiscal 2015
<b>Goals: Staffing</b>	
1) Reduce the number of vacancies in FM&O. 2) Reduce the square footage per FTE to 157,617 square feet by FY15. 3) Implement training program. 4) Plan evaluation metrics and system for FY16.	
SM 1	Reduce the number of vacancies in FM&O

Summary of current status: Of 108 positions, 92 are filled and 16 are vacant.

**Objective SD 2:** Reduce the square footage per FTE to 157,617 square feet. The Comprehensive Maintenance Plan, approved by City Schools' Board of Commissioners on August 12, 2014, projects a square footage per FTE of 86,885 by Fiscal 2019.

**Metric SD 2:**

5 Year Plan: Facility and Maintenance					
Primary Initiatives	FY2013	FY2014	FY2015	FY2015-No Swing Space	FY2015-Swing Space
<b>4) Increase FM&amp;O Staffing</b>			2014 CMP Year-1 Plan	CMP Year-1 Plan	CMP Year-1 Actual
	FTEs	FTEs	FTEs	FTEs	FTEs
Maintenance and Repairs	77	77	86	84	84
Support	15	15	16	15	15
Management	6	6	8	10	10
Total FTEs	98	98	110	109	109
FTE increase			12	11	11
Projected costs to increase FTEs			\$ 633,410	\$ 429,926	\$ 429,926
<b>Square footage per FTE</b>					
Maintenance and repairs	230,538	225,715	201,604	204,120	195,300
Total staff	181,137	177,348	157,617	157,303	152,298

**Objective SD 3:** Implement training program and plan evaluation system for Fiscal 2016 implementation.

**Metric SD 3:**

SM 3 <i>Implement training program. Plan evaluation metrics and system for FY16.</i>				
				FY2015
5) Staff Development				2014 CMP Year-1 Plan
	Training		\$ 10,000	\$ -
	Stat Measures Added to Employee Evaluations		Plan	Planned

Training of the EBS's has been implemented.

**Objective PM 1:** Establish staff whose primary work is preventive maintenance.

**Metrics PM 1:**

PM 1 <i>Establish staff* whose primary work is preventive maintenance.</i>					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
PM 1.1	Number of FTEs planned for preventive maintenance	Input	0	6	
PM 1.2	Number of FTEs actually performing preventive maintenance	Output	0	2	
PM 1.3	Percentage of FTEs performing preventive maintenance: Plan vs. Actual	Outcome		33%	100%

**Objective PM 2:** Effectively schedule time for preventive maintenance activities.

**Metrics PM 2:**

PM 4 <i>Effectively schedule time for preventive maintenance activities.</i>					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
PM 2.1	Total number of preventive maintenance labor hours scheduled	Input		12,480	
PM 2.2	Total number of preventive maintenance actual labor hours	Output		3,873	
PM 2.3	Percentage of actual preventive maintenance labor hours scheduled	Outcome	#DIV/0!	31%	100%

**Objective PM 3:** Plan and direct contractor resources to preventive maintenance activities.

**Metrics PM 3:**

PM 2 <i>Plan and direct contractor resources to preventive maintenance activities.</i>					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
PM 3.1	Total contractor costs planned for preventive maintenance	Input	\$	4,000,000	
PM 3.2	Actual contractor costs for preventive maintenance	Output	\$	7,141,628	
PM 3.3	Percentage of contractor preventive maintenance costs planned	Outcome	#DIV/0!	179%	90%

**Objective PM 4:** Decrease the number of unscheduled and emergency work orders. Emergency work orders are for immediate repair to equipment or the physical plant that is a threat to life and safety or the mitigation of the threat to life and safety.

**Metrics PM 4:**

PM 5 <i>Decrease the number of unscheduled and emergency work orders.</i>					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
PM 4.1	Total number of work orders completed	Output	46,189	53,054	
PM 4.2	Total number of unscheduled work orders completed	Output	22,005	25,867	
PM 4.3	Percentage of unscheduled work orders completed	Outcome	48%	49%	55%

**Objective RM 1:** Improve the average hours to complete an emergency and repair work orders.

**Metrics RM 1:**

RM 1 <i>Improve the average hours to to complete an emergency and repair work orders.</i>					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
RM 1.1	Total number of completed emergency and repair orders	Input	46,189	53,054	
RM 1.2	Total number of labor hours to complete emergency and repair orders	Output	127,994	126,884	
RM 1.3	Average hours to complete emergency and repair work orders	Outcome	2.8	2.4	2.30

**Objective RM 2:** Improve response time to complete emergency and repair work orders.

**Metrics RM 2:**

RM 2 <i>Improve response time to complete emergency and repair work orders.</i>					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
RM 2.1	Total number of completed emergency and repair orders	Input	46,189	53,054	
RM 2.2	Total number of emergency and repair orders completed in 15 days or less	Output	33,990	39,449	
RM 2.3	Total number of emergency and repair orders completed in greater than 15 days and less than 30 days	Output	4,079	5,122	
RM 2.4	Total number of emergency and repair orders completed in 30 days or less	Output	38,069	44,571	
RM 2.5	Percentage of emergency and repair orders completed in 15 days or less	Outcome	74%	74%	76%
RM 2.6	Percentage of emergency and repair orders completed in greater than 15 days and less than 30 days	Outcome	9%	10%	12%
RM 2.7	Percentage of emergency and repair orders completed in 30 days or less	Outcome	82%	84%	88%

**Objective RM 3:** Reduce the percentage of open emergency and repair work orders.

**Metrics RM 3:**

RM 3 <i>Reduce the percentage of open emergency and repair work orders.</i>					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
RM 3.1	Total number of open and completed emergency and repair orders	Input	48,521	56,373	
RM 3.2	Total number of open emergency and repair orders	Input	2,332	3,319	
RM 3.3	Percentage of open emergency and repair orders	Outcome	5%	6%	3%

**Objective RM 4:** Reduce the average age in days of open emergency and repair work orders.

**Metrics RM 4:**

RM 4 <i>Reduce the average age in days of open emergency and repair work orders.</i>					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
RM 4.1	Total number of open emergency and repair orders	Input	2,332	3,319	
RM 4.2	Total age in days of open emergency and repair orders	Output	382,979	380,519	
RM 4.3	Average age in days of open emergency and repair orders	Outcome	164.23	114.65	125.00

**Objective ID 4:** Complete City, State and Federal mandated inspections.

**Metrics ID 4:**

IM 1 Complete City, State and Federal mandated inspections.									
	Maintenance Category	Mandate	Sites	Size	Unit	Contractor Costs	Responsible	Target	Period
IM 1.1	Roofs	278	177	9,167,380	square feet	\$ 200,000	Bill Nelson	2	Year
IM 1.2	Sprinklers/Pumps	272	108	108	each	\$ 88,000	Mike Rozier	2	Year
IM 1.3	Elevators	2136	130	172	each	\$ 432,000	Christine Bradshaw	1	Monthly
IM 1.4	Elevators	178	130	172	each		Christine Bradshaw	1	Year
IM 1.5	Bleachers	26	30	90	sections	\$ 50,000	Mike Rozier	2	Year
IM 1.6	Hood Suppression	160	118	118	each	\$ 40,000	Christine Bradshaw	2	Year
IM 1.7	Operable Walls	72	38	38	each	\$ 8,000	Orville White	1	Year
IM 1.8	Fire Alarms	4	167		each	\$ 150,000	Terry Knight	2	Year
IM 1.9	Cleaning Inspections	563	186	186	each		Tim Ballard	4	Year
IM 1.10	Boilers	85	93	204	each		Al Jenkins	2	Year
IM 1.11	Cooling Equipment	156	40	68	each				
IM 1.12	Generators	103	81	82	each	\$ 65,000	Orville White	2	Year
IM 1.13	Emergency Lights	89	62		each	\$ 25,000	Orville White	2	Year
	Fire Extinguishers	230							
	Electrical Systems								

**Objective CMMS 1:**

Plan, schedule and complete preventive maintenance work orders.

**Metrics CMMS 1:** Presently there are no data for these metrics. Data will become available as the CMMS is implemented across schools. An implementation timeline will be developed when a vendor is selected. As mentioned earlier in the CMP, this process has slowed due to procurement issues. Intent is to have resolved in January 2016 to initiate start-up of CMMS system.

CMMS 1 Plan, schedule and complete preventive maintenance work orders.					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
CMMS 1.1	Total number of preventive maintenance work orders scheduled	Input	1826	3978	
CMMS 1.2	Total number of scheduled preventive maintenance work orders completed	Output	1716	3766	
CMMS 1.3	Total number of preventive maintenance work orders completed	Output	3409	3995	
CMMS 1.4	Percentage of preventive maintenance work orders scheduled	Outcome	54%	100%	
CMMS 1.5	Percentage of scheduled preventive maintenance work orders completed	Outcome	94%	95%	NA

**Objective CMMS 2:**

Initiate activities to inventory physical plant assets in buildings that will not commissioned through the 21<sup>st</sup> Century Buildings Plan financing. This objective is in process to acquire inventory asset services. As the CMMS system is implemented the asset inventory data will integrate into the CMMS.

**Metrics CMMS 2:** The CMMS will be a rolling implementation over a period to be determined by the RFP process; therefore, data will develop over this schedule.

CMMS 2 Plan, schedule and complete preventive maintenance work orders.					
	Measure Name	Category	FY14 Actual	FY15 Actual/Baseline	FY15 Target
CMMS 2.1	Total number of major building assets planned to be inventoried(systems x schools)	Input		0	
CMMS 2.2	Total number of actual major building systems inventoried(systems x schools)	Output		0	
CMMS 2.3	Percentage of plan completed of major building systems inventoried	Outcome	#DIV/0!	#DIV/0!	

**Objective CMMS 3:**

Create a deferred maintenance backlog for all schools where the CMMS is implemented.

**Metrics CMMS 3:** The CMMS will be a rolling implementation over a period to be determined by the RFP process; therefore, data will develop over this schedule.

<b>CMMS 3 Create a deferred maintenance backlog for all schools where the CMMS is implemented.</b>					
	<b>Measure Name</b>	<b>Category</b>	<b>FY14 Actual</b>	<b>FY15 Actual/Baseline</b>	<b>FY15 Target</b>
CMMS 3.1	Total number of CMMS work orders identified as deferred maintenance	Input	318	501	
CMMS 3.2	Total physical plant value	Input			
CMMS 3.3	Percentage of scheduled preventive maintenance work orders completed	Outcome	0%	0%	100%