PORTLAND PUBLIC SCHOOLS

2017 BOND PROGRAM PERFORMANCE AUDIT - PHASE II FISCAL YEAR 2018/2019

NOVEMBER 21, 2019

Presented by:
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FIRM BACKGROUND & AUDIT STANDARDS

- Hired in October 2018 to conduct Annual Performance Audits of School Bond Program
- Sjoberg Evashenk Consulting (SEC) Background
- Generally Accepted Government Auditing Standards (GAGAS, “Yellow Book”)
- Approach to Annual Audit Scope Development

PERFORMANCE AUDIT SCOPE

- **First 2017 Bond Audit Done in 2 Phases:**
  - **Phase 1 :** Development of $790 million Bond amount.
    - Cost Estimation Methodology for Pre-Bond Budgets.
    - Report presented to Board of Education on April 15, 2019 and Bond Accountability Committee on April 17, 2019.
  - **Phase 2 :**
    - Status of 2012 and 2017 Bonds.
    - Cost Estimation and Financial Management.
    - Bond Program Delivery Framework and Document Management.

Section 1: 2012 Bond Projects Were Delivered as Promised

Key Results

- OSM secured nearly $116 million in additional funding to offset unexpected costs.
- OSM needs to address project management issues noted in prior bond audits.

Recommendations

- Develop a written plan for establishing and prioritizing corrective actions needed to address project delivery issues related to change orders, contractor invoices, and other recommendations noted in prior audits of 2012 Bond projects.

Section 2: Most 2017 bond projects are on-Schedule, but will cost more to complete

Key Results

- Approximately $280 million of additional funding is needed to build schools promised.
- Increased construction costs and low initial bond budget estimates resulted in insufficient funding available to complete Benson High School.

Recommendations

- Develop a written plan or strategy for identifying and incorporating additional funding options if future bond funds are not available and regularly communicate and discuss progress with the Board and Bond Accountability Committee.

Section 3: Cost Estimation Practices Improved and Financial Management was Sound, Although Small Enhancements Would Strengthen Processes

Key Results

- Capital project cost estimation followed an established methodology, but documentation of variances needs improvement.

Recommendations

- Ensure cost estimates are fully documented with underlying support and rationale used for soft costs and FF&E—in addition to other cost components—including variations or deviations from stated methodology.

Section 3 (Continued): Cost Estimation Practices Improved and Financial Management was Sound, Although Small Enhancements Would Strengthen Processes

Key Results

- New bond cash flow processes will better align with project needs, once implemented.
- Bond fund investments appeared well-managed.
- Backlogged reconciliations increase risk that are expenditures are not within budget.

Key Results

- Implement the new cash flow planning process as intended at the start of FY 19/20, and update cash flows regularly.
- Immediately allocate efforts on completing overdue FY 18/19 reconciliations between e-Builder and PeopleSoft.

Section 4: Bond Program Delivery Framework and Document Management Practices Should Be Standardized and Formally Implemented

Key Results

- Project teams focused on transparency and accountability, vetted design decisions, and sought stakeholder buy-in.
- Not all delivery guidelines and important project specific management plans were finalized.

Recommendations

- Update and re-issue the PMP, in addition to individual school PTMPs, as well as consider developing quick tools, guides, and checklists to help project teams implement the protocols identified in the PMP and PTMPs.

Section 4 (Continued): Bond Program Delivery Framework and Document Management Practices Should Be Standardized and Formally Implemented

Key Results

- Stronger document management is needed:
  - Project documents were maintained in multiple systems;
  - Not all key team members had access to systems; and
  - Project documents were not always easy to locate.

Recommendations

- Formally communicate, clarify, and train OSM project teams and individuals involved with project delivery on existing document management protocols including requirements and expectations for usage.

Section 4 (Continued): Bond Program Delivery Framework and Document Management Practices Should Be Standardized and Formally Implemented

Key Results

- Certain design phase activities aligned with best practices, although more structure is needed:
  - Design standards and Ed Specs deviations were tracked, although enhancements could be made.
  - Proposed changes to Ed Specs and Design Standards may not always be accessible to project teams.

Recommendations

- Standardize design deviation logs by identifying consistent information to be maintained for each project and ensure approvals are documented.
- Establish a tracking mechanism to store proposed changes to Ed Specs and Design Standards in an accessible location.

Section 4 (Continued): Bond Program Delivery Framework and Document Management Practices Should Be Standardized and Formally Implemented

Key Results

- Value engineering was well employed, but further clarification is needed for vetting decisions.
- Good practices captured in lessons learned can be further enhanced.

Recommendations

- Supplement the "Decision-Making Hierarchy" process with written guidance on what decisions to bring forward and elevate beyond the project team as well as train project teams on standard practice.
- Better document lessons learned by:
  - Categorizing lessons learned log items into separate subcategories
  - Summarizing and regularly distribute or discuss items with project teams.

Questions

Sjoberg Evashenk appreciates the cooperation and assistance from PPS and its external consultants.

Questions?

Portland Public Schools

2017 Bond Performance Audit *(Phase 1)*

Performance Audit – Fiscal Year 2018/2019
Final Report: 2017 Bond Cost Estimates

April 2019

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REPORT HIGHLIGHTS

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RESULTS

Given the complexity of capital construction projects, accurate cost estimates built on sound methodologies are critical to reduce risks of cost overruns, minimize potential gaps in funding, prevent scope reduction, and keep promises made to voters. At Portland Public Schools (PPS), initial cost estimates used to develop the 2017 Bond were supported by professional estimates and empirical data. However, final cost estimate figures presented to the Board of Education (Board) were based on assumptions that were too low and a formal documented methodology did not exist to substantiate cost factors that were lower than market conditions at that time. Yet, it is still early in the 2017 Bond cycle and there are opportunities, to some extent, to make cost adjustments through in-progress value engineering efforts as well as refinements in internal practices to achieve program efficiencies and cost savings. However, because of the scale of the budgetary gap, efforts will also need to involve decisions about eliminating scope or delaying promised projects to subsequent bond cycles.

BACKGROUND AND PURPOSE

On May 16, 2017, Multnomah County voters approved a $790 million School Building Improvement Bond (2017 Bond) to fund renovations at Benson and Madison High Schools, rebuilds at Lincoln High School and Kellogg Middle School, and a variety of health and safety projects at schools within the PPS District. Specifically, the 2017 Bond funds were allocated as follows:

- $580 million in school projects;
- $150 million of health and safety projects; and
- $60 million for program management and contingencies.

In October 2018, PPS hired Sjoberg Evashenk Consulting to conduct performance audits of the 2012 and 2017 Bond projects. As requested by the PPS Board, this first audit scope focused solely on the development of cost estimates supporting the $790 million bond budget figure.

KEY FINDINGS

- While a consistent process was employed, a formal, documented methodology to guide the development of the 2017 Bond budget at $790 million did not exist; however, independent professional cost estimates supported $403.5 million of the $580 million in school project hard costs and $45 million of the $150 million for health and safety projects.
- Total cost estimates for the school projects initially prepared by Office of School Modernization (OSM) operational staff generally aligned with market factors, although OSM executive leadership at that time subsequently adjusted cost factors to a lower range when compared to market conditions and with similar bonds passed at other school districts in Oregon, Washington, and California. In total, former OSM executive leadership reduced initial total project cost estimates proposed by OSM operational staff by nearly $100 million without a documented methodology, rationale, or explanation.
- Similarly, assumptions used by OSM executive leadership in 2017 to arrive at the $60 million budget for program-level costs were generally low when compared with the 2012 PPS Bond and other school districts reviewed.
- Pre-bond cost estimate information provided to the Board aligned with other districts; however, additional information could have increased clarity for decision-makers and transparency to the public.
- PPS is working on containing costs in light of rising project cost estimates. With only $50.8 million in expenses incurred through December 2018, Bond partners will need to exercise continued vigilance to ensure the program stays within current budgetary constraints.

CONCLUSIONS

Current OSM executive leadership and operational staff asserted that significant changes to cost estimation practices have been made since the 2017 Bond passed and issues identified in this audit report have already been addressed.

Since the scope of this audit was limited to assessing the development of cost estimates for the $790 million Bond in 2017, we will verify whether OSM current efforts and practices have addressed issues and recommendations noted from this audit as part of future bond performance audit cycles.

Introduction and Background

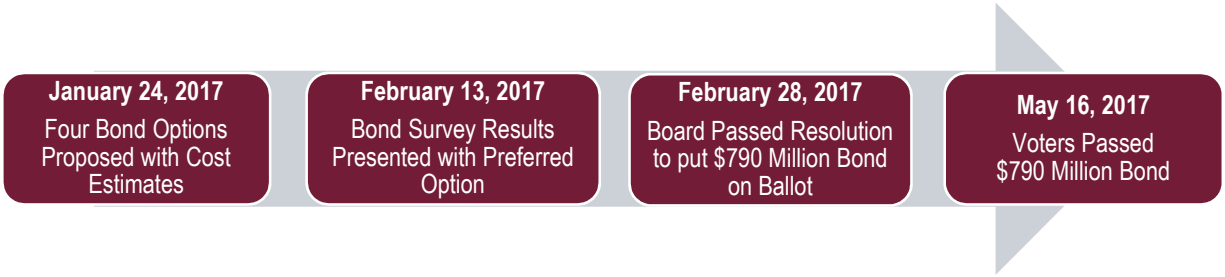
With the age of Portland schools averaging 77 years old, a citizens committee recommended that Portland Public Schools (PPS) engage in a series of school construction bonds to upgrade all PPS schools over a 30-year period to remedy building deficiencies and modernization of learning environments—thus, bringing schools up to current building code and educational standards. [1]

Bond Development

In 2012, Portland voters passed a $482 million bond to pay for the first phase of its school construction efforts through a levy against assessed property values. Schools improved in the 2012 Bond included Grant, Franklin, and Roosevelt High Schools and Faubion Middle School in addition to a series of building improvements at other district schools. This was the first construction bond passed by voters since 1995.

Subsequently, facilities testing revealed growing issues at district schools related to lead, roofing, and fire safety systems. Thus, in 2016, PPS began efforts to propose a 2017 Bond measure to fund another series of health and safety projects in addition to modernization of three high schools and one middle school. PPS enlisted external bond consultants and a Bond Stakeholder Advisory Group to poll likely voters about passing a proposed bond and determining preference on scenarios for spending bond proceeds. [2] Further, PPS Office of School Modernization (OSM) executive leadership and staff developed cost estimates for the various proposed bond options, with the assistance of professional cost estimators, to present to the PPS Board of Education (Board) for approval as shown in Exhibit 1.

EXHIBIT 1. 2017 BOND DEVELOPMENT TIMELINE



Sources: Board meeting materials from January 24, 2017; February 13, 2017; and February 28, 2017; and 2017 Multnomah County Election Pamphlet.

2017 Bond Provisions

On May 16, 2017, Multnomah County voters approved Measure 26-193, the largest Bond in state history at $790 million, backed by a levy rate of $0.68 per $1,000 of assessed property tax value over 30 years. [3] The

[1] According to the Proposed Health, Safety and Modernization Bond Frequently Asked Questions published on the PPS website, some schools were built more than 100 years ago and more than half were built before 1940. Before the prior 2012 Bond, only two schools had been built in the last 35 years.

[2] The Bond Stakeholder Advisory Group was formed to provide feedback to the Board in preparation for the 2017 Bond and consisted of individuals from the local community.

[3] The levy rate was estimated at $1.40 per $1,000 for the first four years, declining thereafter.

measure funded $580 million in renovations at Benson and Madison High Schools and full rebuilds of Lincoln High School and Kellogg Middle School, as well as $150 million for a series of health and safety projects improvements at other schools in the PPS District. Approximately one-third of the budgets for each high school and middle school project also included funds to address health and safety issues at those specific schools as well. Funding was also set aside to provide master planning for future capital upgrades and improvements of Cleveland, Jefferson, and Wilson High Schools as part of $60 million in program contingency and program management as shown in Exhibit 2.

EXHIBIT 2. 2017 KEY COMPONENTS OF $790 MILLION BOND

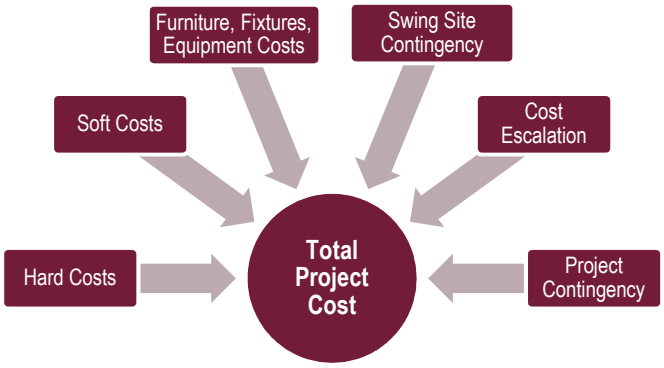
$790 Million Bond		
$580 million **School Capital Projects**	**$150 million** **Health & Safety Projects**	**$60 million** **Program Management & Program Contingency**
Rebuilding or Modernizing: (1) Benson HS (2) Kellogg MS (3) Lincoln HS (4) Madison HS	• ADA • Asbestos • Fire Safety • Lead-based Paint • Radon • Roofs • Security Systems • Water Quality	Included items such as: • PPS Personnel Costs • Fees for Program and Construction Management Consultant and Architects • Master Planning for Future Schools

Source: January 24, 2017 Board of Education Handout, 2017 Multnomah County Election Pamphlet, and Bond Program Budget Overview.

School Capital Project Cost Components

Given the complexities of capital improvement projects, there are multiple cost components associated with the planning and construction of school buildings. Projects will have costs associated with design and construction activities as well as contingencies for unforeseen needs that may occur during a project. At PPS, costs for the design and construction of school capital projects were captured in six primary categories as shown in Exhibit 3.

EXHIBIT 3. TOTAL PROJECT COST COMPONENTS



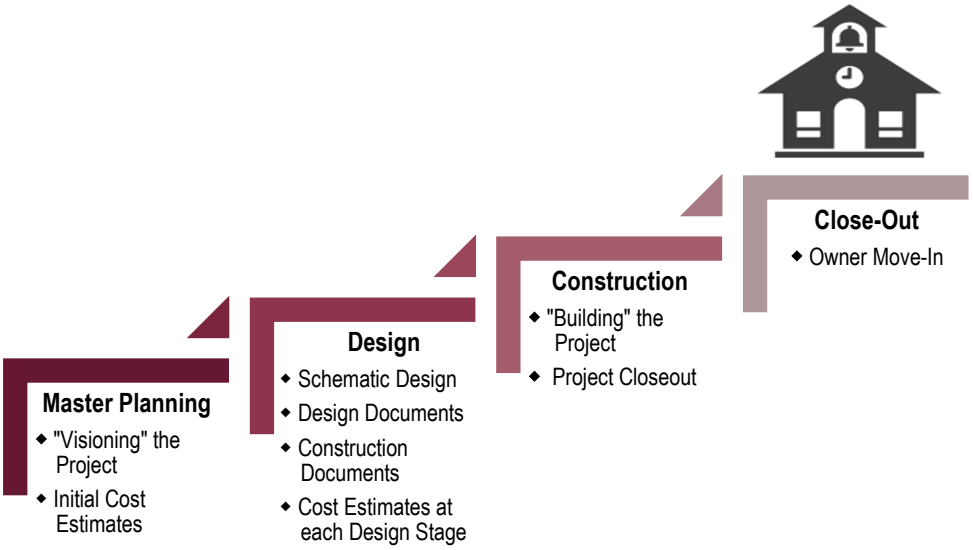
Source: Auditor-generated based on internal PPS Budget Development Worksheets and Data.

Project hard costs include the actual physical construction on the school site such as contractor labor, site equipment, materials needed, and utilities costs, while project soft costs typically include design costs related to architecture and engineering services as well as other costs such as permits, fees, and inspection services. Additional project costs are added for interior school furniture, fixtures, and equipment (FF&E) such as desks, filing cabinets, technical equipment, and trade fixtures as well as possible swing site contingencies to capture costs associated with setting up a temporary school environment, if needed, while renovations are implemented. Another standard component of a project cost is the addition of an escalation factor—both a percentage for expected increases to the cost of construction as time passes as well as the number of years that escalation growth would be applied. Finally, typical project costs also establish a project contingency factor percentage or dollar amount for unforeseen conditions that surface as design and construction services are delivered. Combined, these costs represent the total cost to deliver a project. During master planning and design phases, project cost components and estimates are regularly refined and adjusted with updated data on changing market conditions, design drawings, and site conditions.

School Capital Project Delivery Phases

Planning and implementing a capital construction project is a complex endeavor with several different phases and many different players involved at each phase. Exhibit 4 illustrates the primary phases of a capital improvement project including master planning, design, construction, and close-out.

EXHIBIT 4. KEY PROJECT DELIVERY PHASES



Source: Auditor-generated based on interviews, process walk-throughs, observations, and documentary review.

Health and Safety Projects

Prior to the bond passage in May 2017, PPS testing showed 99 percent of schools had at least one water fixture with lead above acceptable federal levels, roofs were beyond their useful life and leaking, and fire safety systems were insufficient or did not include sprinkler systems. Technical staff in PPS' Facilities and Asset Management (FAM) worked in collaboration with external experts to assess school health and safety needs and estimated cost of mitigation could total approximately $1.6 billion.

To address these needs and mitigate deficiencies, PPS believed it was more cost effective to address health and safety needs as part of full school rebuilds or modernizations following timelines established in its 2012 Long Range Facilities Plan. Thus, for the 2017 Bond, $174 million in health and safety improvements were included as part of the $580 million capital project cost estimates for Benson High School, Lincoln High School, Madison High School, and Kellogg Middle School. [4]

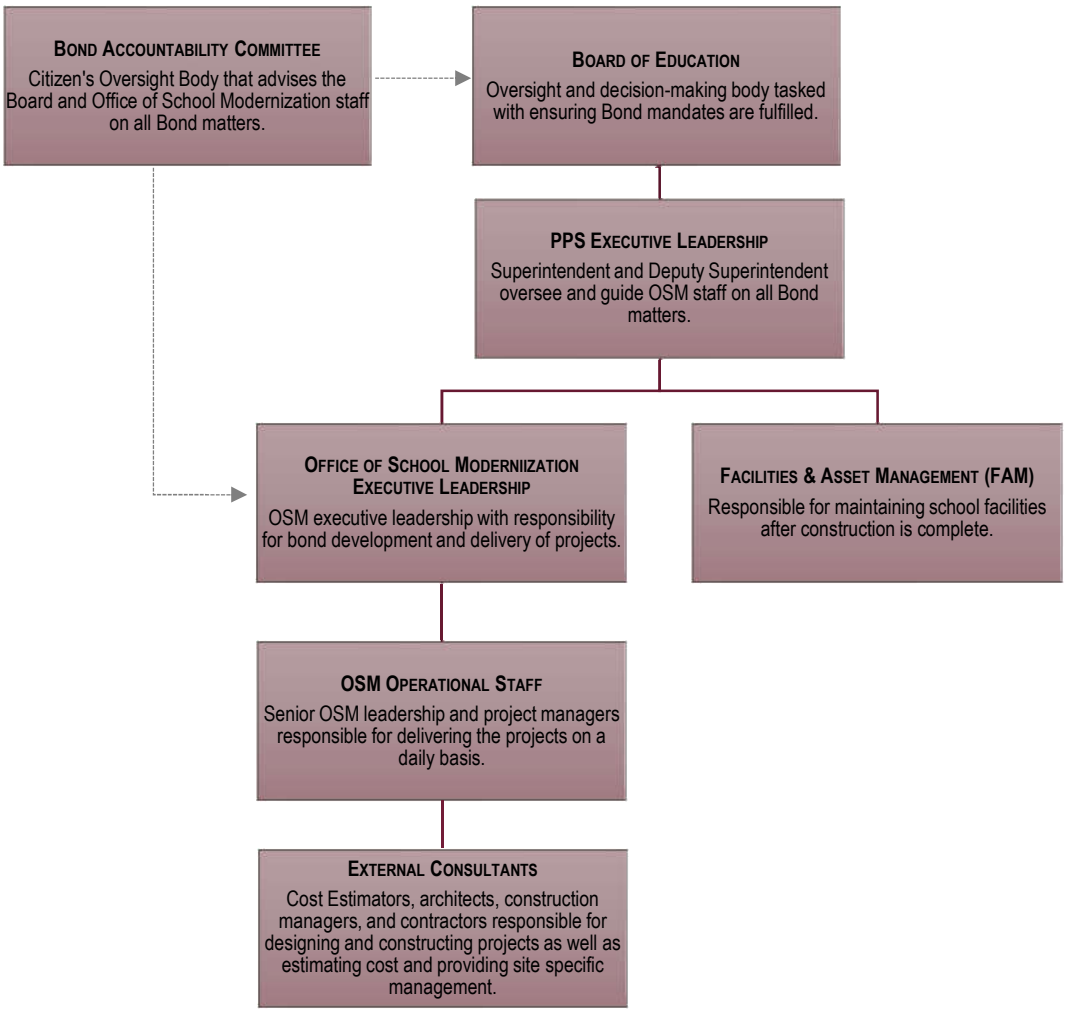
Additionally, PPS believed they had capacity to mitigate additional health and safety deficiencies at other schools within the PPS District. At the same time, however, there was a practical limit to how much construction work could be accomplished during the bond investment cycle due to the availability of skilled construction workers and the limited timeframe available to complete work while students are out of school—a period of approximately 60 days over school summer break. As part of the 2017 Bond, another $150 million was set aside to resolve health and safety concerns at schools across the district.

Bond Partners

As the largest school district in Oregon and one of the largest in the Pacific Northwest with more than 49,000 students and approximately 80 schools, PPS administers capital improvement projects and maintains school buildings. Within PPS, OSM is primarily responsible for the administration, management, and implementation of the 2012 and 2017 Bonds. To assist in these responsibilities, there are a number of internal and external Bond Partners involved as well as oversight provided by a citizen's Bond Accountability Committee (BAC) and the Board as shown in Exhibit 5. However, while the BAC and Board have responsibility as part of overall bond delivery and oversight, they were not involved with the development of project and bond cost estimates.

[4] The $174 million set aside for health and safety improvements at the four schools—Lincoln, Madison, Benson, and Kellogg—were incorporated into total project cost estimates for those schools totaling $580 million.

EXHIBIT 5. KEY BOND PARTNERS



Source: Auditor-generated based on interviews, process walk-throughs, observations, and documentary review.

Note: Exhibit reflects structure at the time the 2017 Bond was developed.

Scope and Methodology

PPS hired Sjoberg Evashenk Consulting in October 2018 to conduct annual performance audits of the 2012 and 2017 School Improvement Bonds over a four-year period. To establish the initial annual work plan and audit objectives, Sjoberg Evashenk Consulting interviewed PPS executive leadership and operational staff, and stakeholders; gathered and reviewed initial documents; and performed a high-level risk assessment.

For 2018, the performance audit will focus on the period between April 1, 2017 and March 31, 2019 and on several objectives such as reviewing cost estimates, determining the delivery status of all projects and programs, assessing strengths and weaknesses of PPS program oversight, testing specific project management practices and challenges, and comparing results to Bond delivery goals, construction industry leading practices, and other school districts, where practical and data available.[5]

Results will be reported in two separate audit reports in 2019. The first performance audit report will have a primary objective on attempting to identify the basis for setting the 2017 Bond budget at $790 million as requested by the PPS Board.[6] To meet that objective, SEC performed a variety of audit tasks including the following.

- Conducted in-depth interviews with key personnel including, but not limited to current Superintendent and Deputy Superintendent business and operations, current Chief Operating Officer, current Senior Director Office of School Modernization, current Senior Director Environmental Health and Safety, school projects senior and assistant project managers, construction managers, Senior Bond Financial Analyst, PPS staff responsible for procurement, public records, information technology, human resources, facilities and asset management, and key consultants including architects and professional cost estimators to understand and assess methodologies, activities, worksheets, tools, context, and models employed to develop the 2017 Bond estimates.
- Analyzed and assessed documents including, but not limited to, cost estimate worksheets and PowerPoint presentations, long range facilities plan, professional cost estimations, architect due diligence reports, Primavera schedules, budget data maintained in PPS' e-Builder system, and high-level internal budget development documents, in addition to Board agendas, meeting minutes, videos, and meeting materials between September 6, 2016 and February 5, 2019.
- Compared PPS Office of School Modernization (OSM) cost estimation practices, assumptions, and amounts regarding project costs, contingencies, escalation, and program management to industry standards where available and other school districts in Oregon, Washington, and California.

[5] Industry best practices were drawn from a variety of sources including the Construction Management Association of America (CMAA) Construction Management Standards of Practice, Project Management Body of Knowledge (PMBOK) Construction Extension, and Sjoberg Evashenk Capital Construction Program Audit Library.

[6] The second performance audit report will be issued later in 2019.

- Analyzed master planning documents, due diligence reports, professional cost estimates, schematic designs, design development documents, and construction documents related to Lincoln, Madison, and Benson High Schools as well as Kellogg Middle School.
- Worked with PPS Information Technology to run queries of employee-specific computer drives and Google drives. Analyzed results of key word search parameters related to the bond, cost estimates, contingencies, budget development and models, project costs, cost estimators, and architects for specific schools from files of past and present employees involved with 2017 Bond estimates.
- Reviewed results from email search queries performed as part of a two-year public records request containing more than 6,000 pages as well as a 78-page bond fact finding email search.
- Researched all PPS Board agendas, meeting materials, minutes, and audio between September 6, 2016 and February 5, 2019 as well as the Bond Accountability Committee meeting minutes and progress reports between October 19, 2016 and January 19, 2019.
- Reviewed publicly available meeting agendas, materials, videos, and meeting minutes to understand and compare other school districts' information presented to their respective Boards prior to passage of similar bonds for the following school districts:
    - Beaverton, OR School District
    - North Clackamas, OR School District
    - Eugene, OR School District
    - Salem-Kaiser, OR School District
    - Vancouver, WA Public School District
    - San Francisco, CA Unified School District
    - Santa Clara, CA Unified School District
- Compared assumptions made by OSM executive leadership and operational staff prior to passage of the Bond regarding soft costs, project and program contingency, escalation, and program management costs to assumptions utilized by the following school districts during the development of similar bond measures:
    - Beaverton, OR School District
    - North Clackamas, OR School District
    - Salem-Kaiser, OR School District
    - Santa Clara, CA Unified School District
- Compared PPS' construction cost escalation against actual changes in construction costs. Actual construction cost were captured using the construction cost index for Portland produced quarterly by Rider Levett Bucknall.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Section 1: $790 Million Bond was Partially Supported by Independent Professional Estimates

In the public sector, where funding amounts are often set by voter-approved measures, owners must exercise prudence and diligence in estimating capital project costs and programming limited financial resources. Without this framework in place, a program is at risk of financial instability and loss of public trust to support similar initiatives in the future. For the $790 million 2017 Bond, we analyzed underlying cost estimates for each of the three major components as follows:

1. School Capital Projects—$580 million
2. Health and Safety Projects—$150 million
3. Program Management and Contingency—$60 million

Processes employed by OSM during the early stages of the 2017 Bond development phase were consistent with leading project cost estimation practices—as evidenced by both the use of a professional cost estimator to calculate project hard costs and external architects to develop school-specific master planning documents. However, when OSM began adding other required cost factors to the professional hard cost estimates to calculate total project costs, practices employed became less formal and eventually were no longer trackable to a replicable methodology.

Nonetheless, while no comprehensive documented methodology for estimating costs for the three Bond components was in place, the hard cost portion of the $580 million estimate for the school capital projects was supported by underlying independent professional estimates. [7] However, other cost factors were added to hard costs to arrive at total project costs as follows:

Total Project Cost = Hard Cost (from professional estimator)
+ Soft Cost (percent of hard cost)
+ FF&E (project specific)
+ Contingency (percent of all of the above)
+ Swing/Temporary Space (project specific)
+ Escalation (based on market condition and construction schedule)

Figures for these cost components, first proposed by OSM operational staff, aligned with market factors at that time. However, OSM executive leadership subsequently reduced the total capital school project cost estimates by $100 million without adequate justification or explanation of its rationale. [8] Further, the underlying assumptions used as part of the reduced project escalation and soft costs were inconsistent with market conditions at the time, industry leading practices, and similar bonds passed at other school districts.

[7] Capital project construction hard costs include estimates of expenses such as new construction or renovation, building and site-work, contractor bond and insurance, general conditions, geotechnical conditions, and other construction-related costs.

[8] Auditors attempted to locate documentation through reviews of internal budget worksheets and emails, 6,000 pages of documents discovered from a public records email request, key-word search results from employee personal computer drives and Google drives, and high-level searches of PPS internal shared drives.

Similarly, we found estimates for the $150 million of health and safety costs seem to be based on underlying independent professional estimates as well—although cost estimate reports to substantiate the specific details were not available for all health and safety categories. For the third and final component of the 2017 Bond related to program-level management and contingency estimates, no industry thresholds or best practices exist to validate the $60 million estimate; however, OSM executive leadership used assumptions and percentages that were low when compared to other districts reviewed and PPS' own historic performance.

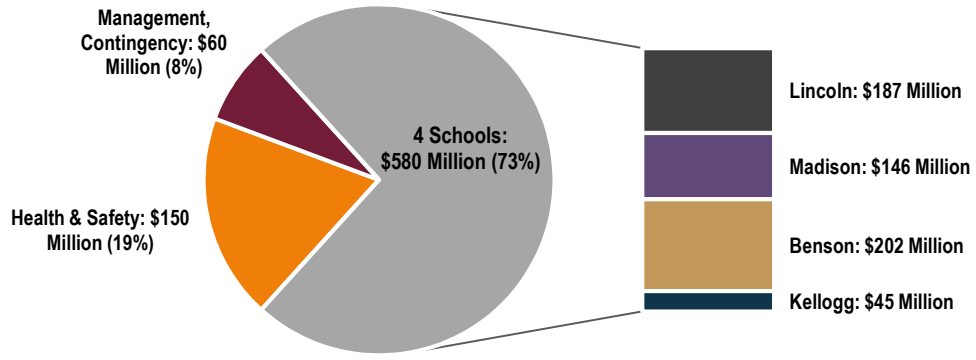
Although OSM operational staff and the program management consultant raised concerns with the cost factors used by OSM executive leadership during the development of the bond budget, we were unable to locate any documentation on how or whether those concerns were considered when OSM executive leadership presented bond options to the Board for approval in January 2017.

Nearly 70 Percent of School Capital Project Costs were Supported by Underlying Independent Professional Estimates

In contrast to best practices guidelines, a formal documented or consistent cost estimating methodology was not in place during the early bond budget development phase that included consideration of consistent cost components, data sources for underlying assumptions, roles and responsibilities of internal and external experts, processes to ensure consistency in cost considerations across schools or experts involved, due diligence vetting and approval practices, and retention of underlying documents. [9]

However, by early January 2017, initial costs for the school projects' master planning phase were finalized and presented to the Board with more than 73 percent of the $790 million earmarked for four school capital project improvements, as shown in Exhibit 6. Part of these costs were developed by PPS-hired architects and a professional cost estimator based on initial assessments of school buildings and site conditions, and were combined with OSM estimates for soft costs, FF&E, escalation and contingencies to arrive at total school project costs.

EXHIBIT 6. SCHOOL PROJECTS IN COMPARISON TO $790 MILLION BOND



Source: January 24, 2017 Board of Education Handout, 2017 Multnomah County Election Pamphlet, and Bond Program Budget Overview.

[9] The Construction Management Association of America (CMAA) emphasizes the importance of having a compatible and consistent cost estimate format to facilitate and communicate cost comparisons.

Total project costs were categorized into six primary components including hard costs, soft costs, FF&E, swing, escalation, and contingency. For the hard costs component, the professional cost estimator used preliminary architectural drawings prepared by each school's architect during the master planning phase to estimate costs. Aligning with industry practices, the basis of the estimates included a series of assumptions including, but not limited to, gross floor area, site-work, and margins and adjustments for items such as general conditions, overhead and profit, design contingency, or bonds and insurance.

Based on underlying documents, these independent professional cost estimates for project construction hard costs totaled approximately $403.5 million in January 2017 as shown in Exhibit 7—supporting nearly 70 percent of the $580 million in total school project costs or 51 percent of the total $790 million 2017 Bond.

EXHIBIT 7. PROFESSIONAL PROJECT CONSTRUCTION HARD COST ESTIMATES AS OF JANUARY 2017

Source: 2017 Bond Master Planning Final Concept Options reports prepared by PPS cost estimation consultant for the four schools shown.
Note: Costs were estimated by the PPS cost estimation consultant using rates current as of January 2017. Lincoln Hard Cost shown is for the horizontal option with site option B per the 2017 Bond Master Planning Cost Estimate prepared by PPS' Bond Cost Estimator.

For the remaining cost components related to areas such as soft costs, escalation, and contingency, OSM operational staff calculated estimates totaling $271 million using internal percentages and factors applied against project construction hard costs. This practice and the initial internal percentages used by OSM operational staff generally aligned with industry market conditions at that time.

OSM Executive Leadership Lowered School Capital Project Estimates by Approximately $100 Million, but No Explanation or Rationale Existed to Support Reduction

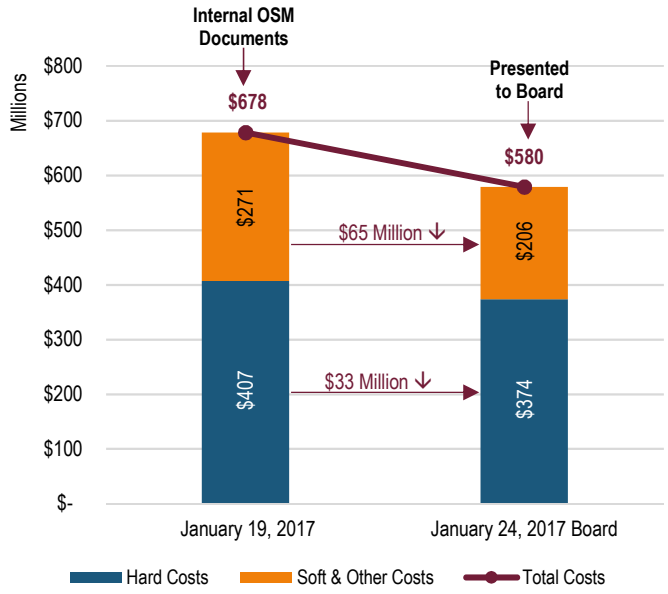
While it is not unusual for project owners like PPS to modify early independent professional cost estimates as they are most familiar with project-specific nuances, a documented explanation or rationale for adjustments to professional and OSM internal estimates would better ensure the integrity of estimates and enhance accountability.

As previously discussed, after OSM executive leadership received professional construction hard cost estimates for the four school projects in mid-January 2017 totaling $403.5 million, OSM operational staff ran various models adding amounts for soft costs, escalation, contingency, and FF&E to calculate total project estimates. One model from January 19, 2017 used cost assumptions that aligned with market conditions, historical performance, and leading practices that resulted in a $678 million total project cost estimate for the four schools as shown in Exhibit 8. [10] Subsequently, OSM executive leadership lowered the

[10] Public records requests data contained cost model versions 22, 23, and 24 that were generated between January 19, 2017 and January 23, 2017. Auditors used the January 19, 2017, version 22 as basis for comparison to data presented to the Board on January 24, 2017.

total school project cost amount by $100 million for a new total of $580 million—which was provided to the Board on January 24, 2017 and later approved by voters in May 2017.

EXHIBIT 8. SUMMARY COST ESTIMATE DEVELOPMENT FOR THE FOUR SCHOOL PROJECTS, JANUARY 2017

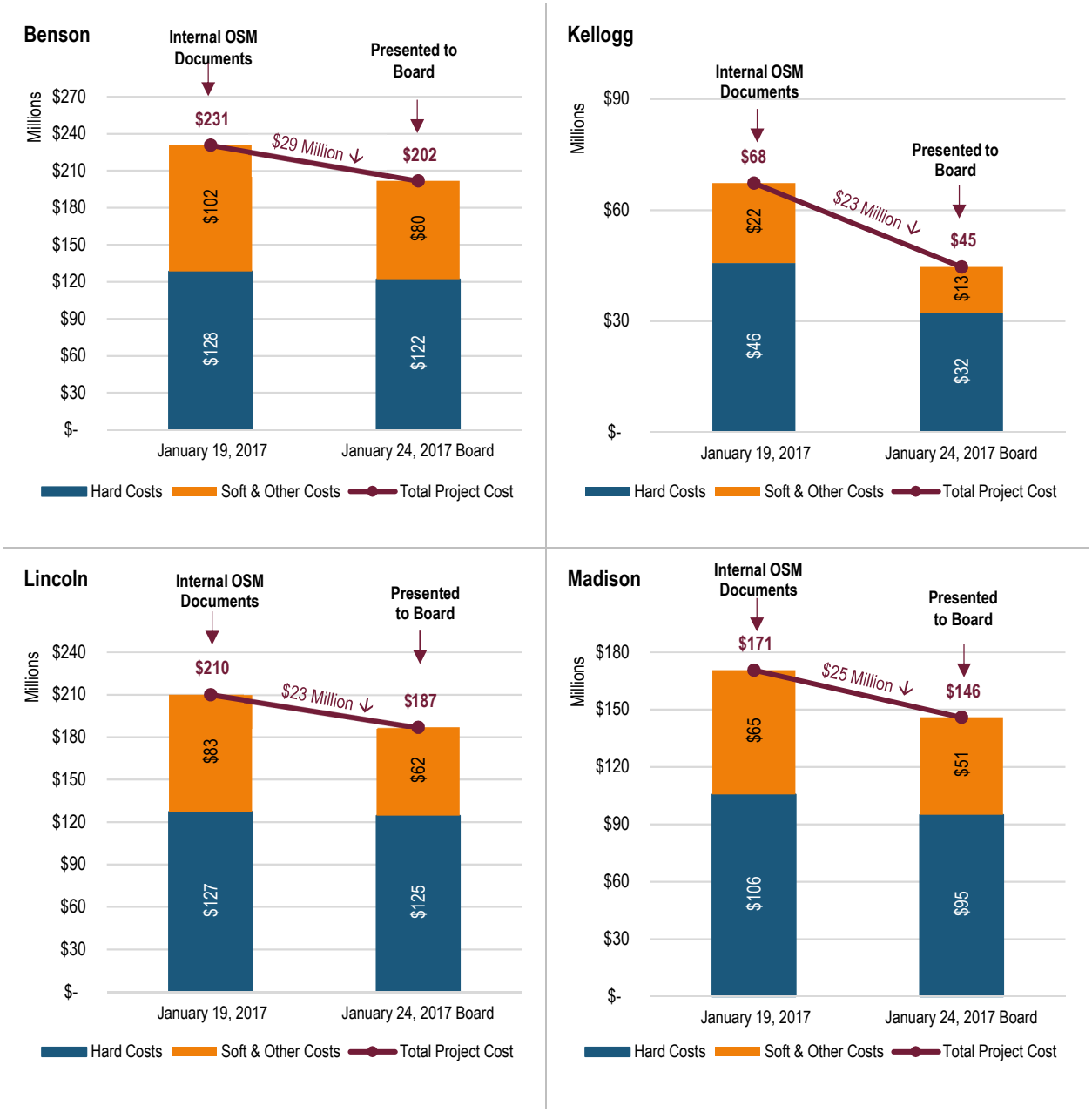


Source: 2017 Bond Master Planning Final Concept Options reports prepared by PPS cost estimation consultant. OSM Bond Budget Development Worksheets, Version 22, January 19, 2017. Board Working Session Meeting Packet, January 24, 2017. Estimates based on Option #1 approved by the Board in February 2017.

While it does not appear that project scope was also cut when cost projections were lowered based on our high-level review, it was difficult to determine with certainty since there were no underlying architect due diligence reports with validated costs supporting the $100 million reduction. As such, the underlying reason for the reduction in costs cannot be substantiated due to a lack of documentation or reliable supporting data. With an unsubstantiated approximate $100 million reduction—comprised of $33 million lowered from independent professional project construction hard cost estimates and $65 million lowered from internal project soft and other cost estimates—PPS was challenged from the beginning to deliver the projects within the approved budgets for the 2017 Bond.

At the individual school level, that $100 million reduction during the Bond budget development phase resulted in decreases in individual estimates ranging from approximately $23 million to $29 million lower than initial pre-bond budget estimates as shown in Exhibit 9.

EXHIBIT 9. PROJECT COST ESTIMATES BY INDIVIDUAL SCHOOL, JANUARY 2017



Source: 2017 Bond Master Planning Final Concept Options reports prepared by PPS cost estimation consultant for the four schools shown. OSM Bond Budget Development Worksheets, January 19, 2017. Board Working Session, January 24, 2017.

Note: Soft & other costs included soft costs, furniture, fixtures, and equipment, project contingency, and escalation. Lincoln Hard Cost shown is the Full Replacement Option per the Lincoln 2017 Bond Master Planning Final Concept Options report.

While adjustments to professional estimates may be warranted to account for factors such as expected volatility in the construction market, historical data from similar bonds, or professional judgment by OSM leadership and operational staff or other industry experts, best practices strongly recommend that those considerations be formalized and supported by an underlying methodology that documents the decision-

making process including any vetting of factors to and validity of assumptions used. [11] However, this framework did not appear to be in place when cost estimates for the 2017 Bond were developed. Rather, the audit found limited availability of documentary evidence surrounding key budget and cost estimation decisions, which further complicated any reconciliation of internal OSM budget working documents with information presented to the Board for approval.

When these cost reductions are combined with cost assumptions on the lower-end of the market spectrum as discussed in the next section, there is added strain and risk on the budget being sufficient to meet the 2017 Bond promises. This risk is further compounded if project designs or scopes are not similarly adjusted to reflect the budget reductions.

Other School Capital Project Cost Factors Were Low when Compared to the Market

While project construction hard costs typically comprise the majority of a project's total costs, there are five key cost components related to (1) escalation, (2) soft costs, (3) contingency, (4) FF&E, and (5) swing site contingency, if applicable. Our review found that some of the factors OSM executive leadership used in the cost estimates presented to the Board for approval of the 2017 Bond were not aligned with market conditions at that time.[12]

Escalation Assumptions were Inconsistent with Market Conditions at that Time and Historical Performance

When looking at historical rolling one-year escalation factor averages for the Portland region prior to the passage of the 2017 Bond, escalation was higher than OSM internal bond budget development worksheets. Specifically, while the one-year rolling average ranged between 4.4 percent and 6 percent between January 2015 and January 2017, OSM executive leadership used an escalation factor at the lower-end of the market at 4 percent.

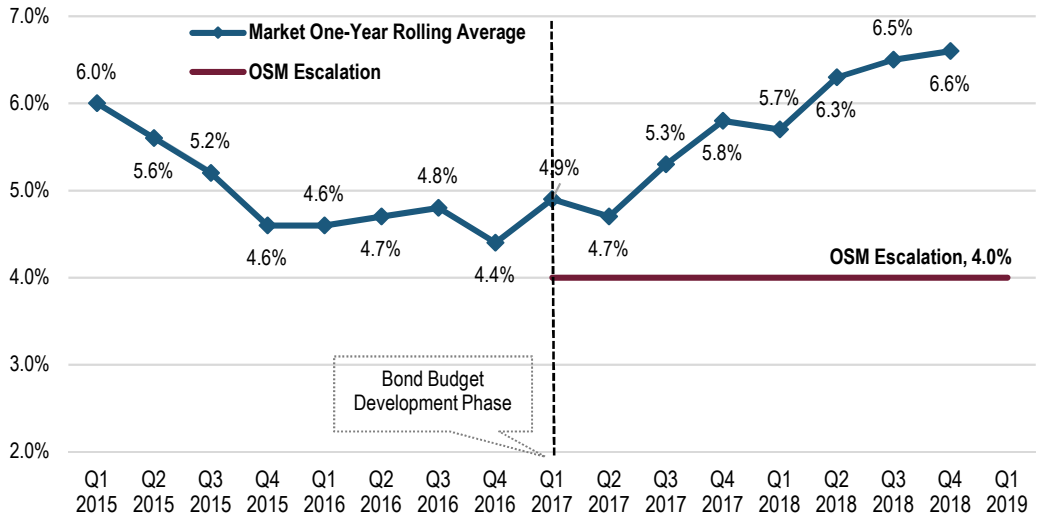
This nuance alone can possibly translate into a $21.2 million variance based on total project costs of $580 million.[13] In fact, actual escalation since the passage of the 2017 Bond has been higher than 4 percent, ranging from 4.7 percent to 6.6 percent as shown in Exhibit 10.

[11] The Construction Management Association of America (CMAA) Construction Management Standards of Practice, 2015.

[12] Market condition factors and data are captured nationally by geographic region and by select metropolitan areas, as well are widely-reported by industry experts and available for public owner use.

[13] The hypothetical $21.2 million represents the difference between annual escalation rates of 4 percent and 6 percent assuming a two-year construction period: $580 million minus $76.1 million escalation over 2 years at 4 percent and 6 percent. Difference is $21.2 Million.

EXHIBIT 10. ESCALATION MARKET CONDITIONS VS. OSM ASSUMPTIONS, JANUARY 2017



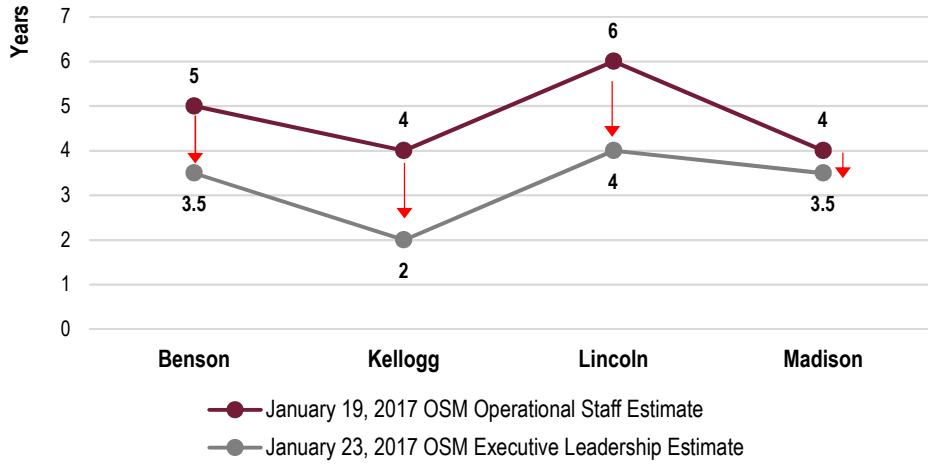
Source: Auditor-generated based on North America Quarterly Construction Cost Reports prepared by Rider Levett Bucknall, Quarter 1, 2015 to Quarter 4, 2018.

While the escalation factor used by OSM executive leadership was lower than actual construction cost increases at that time, other school districts used similar escalation factors in their bond programs that resulted in unfavorable budget issues. For instance, the Beaverton School District used a cost escalation factor of just 3 percent in its 2014 bond, while the North Clackamas School District assumed 4 percent when planning its 2016 bond package. Not only did both Beaverton and North Clackamas School Districts' escalation factors not align with the market, but actual construction cost increases remained well above these estimates. In fact, this resulted in a gap between actual and expected escalation in the Beaverton School District that is expected to grow to an 8.5 percent gap by 2021.

Moreover, another important escalation aspect for multi-year construction programs relates to the number of years for which escalation is calculated that should track with expected construction duration. For example, if construction is anticipated to take six years, then escalation should be extended over the same six-year period or the project could face an immediate and heightened risk of budget challenges.

For its initial internal 2017 Bond estimates, OSM operational staff correctly considered the four to six-year construction schedules based on underlying project scheduling documents as shown in Exhibit 11. However, the final estimate reduced that timeframe to two to four years. While reducing the number of years in calculating escalation also reduced total project cost estimates, this increased overall risks to the program in terms of cost overruns or gaps in funding by not aligning this calculation with reasonable construction schedules.

EXHIBIT 11. REDUCTION IN THE NUMBER OF YEARS FOR ESCALATION CALCULATION



Source: OSM Bond Budget Development Worksheets: January 19, 2017, January 23, 2017, 4pm; OSM Internal Project Execution Schedule, December 6, 2017.

In part, the cumulative effect of setting an escalation factor lower than market and shortening the number of years for escalation calculation purposes contributed towards the forecast issues experienced shortly after the 2017 Bond passed.

Soft Cost Assumptions did Not Align with Historic Performance

OSM executive leadership set additional project-level soft cost assumptions that were also lower than industry values and further exacerbated the budget challenges PPS faced after voters approved the 2017 Bond. For instance, OSM operational staff initially estimated soft costs at 15 percent of the construction hard costs for each of the four schools. However, as shown in Exhibit 12, those soft costs were reduced to 13 percent by OSM executive leadership without explanation when sent to the Board for approval—a factor that was significantly lower than comparables or historical PPS data from the 2012 Bond and internal 2014 High School Estimation Methodology considerations where soft costs were set at around 20 percent. [14]

Likewise, the North Clackamas School District with a similar capital construction bond combined soft cost estimates with FF&E estimates to arrive at a combined rate of 35 percent for these hard costs. [15] Although the North Clackamas School District's 35 percent figure included both soft costs and FF&E as one factor, it was still higher than the factor used by PPS if we combined soft costs with FF&E. Specifically, PPS' combined rate averaged 20.5 percent and ranged from 17 percent to 28 percent for individual schools as shown in Exhibit 12.

[14] Memo from former OSM Executive Director detailing High School Estimation Methodology, January 16, 2014.

[15] The $433 million North Clackamas School District's Capital Construction Bond passed in November 2016. The budget was revised to $466 million in May 2017.

EXHIBIT 12. COMBINED SOFT COST AND FF&E COST FACTORS USED BY PPS, JANUARY 2017

	Soft Cost		FF&E		Combined Rate
	Initial	Final	Initial	Final	Final
Benson	15%	13%	14%	15%	28%
Kellogg	15%	13%	4%	6%	19%
Lincoln	15%	13%	4%	4%	17%
Madison	15%	13%	5%	5%	18%

Source: OSM Bond Budget Development Worksheets: January 19, 2017 and January 23, 2017, 4pm.

Contingency Assumptions were more Aligned with Past Performance

By contrast, OSM operational staff estimates for school project contingency were more in line with industry at 10 percent for rebuilding Kellogg Middle School and Lincoln High School and 15 percent for the renovations at Benson High School and Madison High School. [16] In fact, these percentages were comparable to the 2012 PPS Bond that used a 15 percent contingency for modernizations as well as aligned with the Beaverton School District that considered a 10 to 15 percent contingency for new construction and up to 20 percent for renovations on its school improvement projects. [17, 18]

Project-Level Cost Concerns were Raised, but we Could Not Determine if they were Considered by OSM Executive Leadership

During cost development efforts in the days before bond estimates were presented to the Board on January 24, 2017, OSM operational staff and external consultants raised concerns about factors considered and numbers used—although, we could not find any documentation to determine whether those concerns were considered or how final decisions were made. In fact, OSM operational staff stressed the need for a documented estimation methodology similar to what had been produced for the 2012 Bond that should be understandable and replicable. Additional concerns raised are summarized in Exhibit 13 and mostly related to cost factors used being too low.

EXHIBIT 13. KEY CONCERNS RAISED BY OSM OPERATIONAL STAFF AND CONSULTANTS

	PPS Assumptions	Concerns Raised
Soft Cost	10% - 13%	⚠ 13% is on the lower-end of the acceptable range of 13-15%
FF&E (1)	4% - 15% or $16 - $47 per sf	⚠ $16 per square foot is on the lower-end of the acceptable range of $16-$20 per square foot
Contingency	10% - 15%	⚠ Low project contingency

[16] The Construction Management Association of America (CMAA) suggests adding a contingency of 15 to 25 percent to the total of estimated construction costs.

[17] The $680 million Beaverton School District's Capital Construction Bond passed in May 2014.

[18] PPS 2012 Bond contingency factors were similar to internal 2014 High School Estimation Methodology using a 15 percent contingency factor.

	PPS Assumptions	Concerns Raised
		⚠ Guaranteed Maximum Price (GMP) contingency excluded from total project cost estimate (2)
Swing	Only considered for Lincoln	⚠ Swing excluded from hard cost estimate ⚠ Swing is underestimated
Escalation	4% annually	⚠ Should be between 4-5% ⚠ 4% is low-end of range ⚠ Should be realistic and tie-in with project schedule

Source: OSM operational staff and external consultants emails, January 2017.
Note: (1) FF&E was $16/square foot for Kellogg middle school, Lincoln high school, and Madison high school. For Benson, FF&E was $45 per square foot on January 19, 2017 and $47 per square foot on January 23, 2017. (2) The Construction Management Association of America defines GMP as "a contractual form of agreement wherein a maximum price is established based upon an agreed scope of work stablished with an understanding by the parties that the actual cost of work could be more or less."

Additional school-specific cost concerns raised by external school project architects included, but were not limited to, the exclusion of fireproofing steel or insulation of exterior walls from the hard cost estimate. Anecdotally these and other concerns such as missing a third-party reconciliation of the hard cost estimates were echoed by the school project architects. Yet, there was no documentation to determine whether these concerns were considered as part of the 2017 Bond estimates. Contrary to industry and good business practice, these concerns and resulting impacts were not sufficiently documented to demonstrate diligence in the 2017 Bond decision-making process or promote greater accountability and transparency to the public.

Health and Safety Project Costs Appeared to be Based on Independent Estimates and Needs Assessments, although Full Documentation did not Exist to Substantiate

As part of the 2017 Bond, PPS set-aside $150 million for health and safety projects in eight specialty areas at schools throughout the district. These eight areas related to water quality, fire safety, asbestos, lead-based paint, roofs, Americans with Disabilities Act (ADA), radon, and security systems.

Cost estimates to fully mitigate issues in these areas were calculated using different methodologies depending on the unique health and safety area and were based on information sources including professional cost estimators and technical consultant estimates; prior assessments for seismic, ADA, and roofing needs conducted in 2009; and FAM's internal facility database as shown in Exhibit 14. [19] This included a 2008 comprehensive assessment by an external consultant that established a baseline report of facility conditions noting deficiencies by system (such as electrical, fire protection, and roofing) as well as deficiencies by cost category (such as hazardous material, ADA compliance, or deferred maintenance). Further, PPS indicated that the professional cost estimator updated prior assessment costs, calculated contingencies, and estimated inflation. Although the health and safety projects are much smaller in scale than the comprehensive school modernizations projects, adding contingency and escalation factors to total project costs aligns with best practices.

[19] Based on a January 24, 2017 Board Bond Work Session Handout.

While we were not able to locate or substantiate all of the underlying documentation, there did seem to be a conscientious methodology employed to estimate costs with supporting empirical data based on independent consultant estimates and formal needs assessments in existence at the time. Specifically more than $45 million—or 30 percent—of amounts presented to the Board on January 24, 2017 for water quality and lead-based paint projects were fully supported by underlying consultant reports prepared in 2016. In addition, for the roof projects, some assessments prepared by the roofing consultant in 2008 were available, but updated 2016 cost estimates could not be located. Similarly for ADA, while the 2013 ADA assessment was available, the 2016 ACC cost estimate was not. For the remaining categories, records could not be located to support any of those estimates.

EXHIBIT 14. SOURCES FOR COST ESTIMATES ASSOCIATED WITH THE $150 MILLION IN HEALTH & SAFETY PROJECTS

Project Area	Estimate	Cost Data Source (1)
Water Quality	$28,492,000	CH2M December 2016 Report and Cost Estimate
Fire Safety	$25,849,990	ACC December 2016 Cost Estimate based on 2016 FAM Inventory of Existing Conditions
Asbestos	$12,000,000	ACC December 2016 Cost Estimate based on 2016 Risk Management Database
Lead-based Paint	$16,623,936	PBS Environmental Report and December 2016 Cost Estimate
Roofs	$50,907,949	ACC November 2016 Cost Estimate based on FAM Inventory of Existing Conditions and 2008 Professional Roof Consultants, Inc. Assessments
ADA	$10,000,000	ACC November 2016 Cost Estimate based on 2013 Akrom Moisan Architects' ADA assessment
Radon	$1,126,125	ACC November 2016 Cost Estimate based on 2016 PPS Risk Management Database
Security Systems	$5,000,000	Triad Consulting December 2016 Cost Estimate and ACC November 2016 Cost Estimate
Total	**$150,000,000**	

Source: January 24, 2017 Board of Education Informational Report on Environmental Health and Safety Facility Improvements.

Acronyms: ACC = Architectural Cost Consultants (an external firm); FAM = Facilities and Asset Management; PBS = PBS Engineering and Environmental (an external firm).

Note (1): In addition to independent professional estimates for project hard costs, PPS added the following factors: 15 percent for soft costs, 10 percent for contingency, 15 percent for a construction contingency, 5 percent for escalation, and 5 percent for abatement on fire, roof, ADA, and security projects.

Although other school districts in Oregon, Washington, and California had similar bond measures with mention of health and safety projects planned, we did not find publicly available data to allow a comparison to FAM's health and safety project cost estimates. [20] Moreover, none of the bond measures for the other districts we reviewed had a separate standalone health and safety project component like PPS' 2017 Bond.

[20] Other districts reviewed were Beaverton, Clackamas, Eugene, Salem-Kaiser, Hillsboro, Gresham, and Battleground School Districts in Oregon as well as Vancouver and Seattle School Districts in Washington and San Francisco School District in California.

Program-Level Cost Estimates Were too Low and did not Align with Other Districts Reviewed

As with any major capital construction program, there are costs that cannot be attributed to a specific project and typically relate to the overall delivery of the program. Two key components of those overarching, program-wide costs are (1) program contingency and (2) program management.

Similar to contingency at a project-level, the intent behind a program contingency is to set aside or reserve amounts for unforeseen events and financially mitigate risks associated with the delivery of large-scale capital programs. Since the level of risk varies based on unique complexities of individual capital projects as well as an owner's risk tolerance, there are no set established industry thresholds for setting these program contingency amounts. Furthermore, program management generally represents labor costs of owner staff and fees for any owner representatives hired to assist with the management and delivery of the program, as well as technology costs or office space. Depending on the unique mix of in-house and consultant staff and related staffing levels, program management costs can also vary and, thus, there are no firmly-established industry thresholds for estimating program management amounts. However, both the program contingency amounts and the program management amounts are typically applied as a percentage of total capital project costs.

For the 2017 Bond, we could not find any documented methodology used to estimate program costs and percentages established may be too low when compared to other district bonds we reviewed as well as historic experiences of PPS' 2012 Bond. As a result of assuming program cost percentages on the lower end, OSM executive leadership at that time may have increased risks and challenges of delivering the Bond projects on-budget and/or as promised to the voters.

Methodology Used to Estimate Program Costs was not Documented

While we analyzed several internal budget working documents, there was no formal or comprehensive budget development methodology employed or documented supporting program cost estimates. For instance, OSM executive leadership identified $60 million for program management and program contingency. However, there was no information explaining how that number was derived nor any historical cost analysis performed to help support assumptions.

Because program management costs are primarily labor dependent, a sound practice in estimating management costs entails evaluating a program's staffing needs over the life of the program. At the Beaverton School District, staff derived program management cost estimates for its bond measure in part from salary costs of district employees working on the program as well as planned staff augmentation over the life of the program. A similar methodology was employed by OSM operational staff for its 2012 Bond where its program management cost estimate was based on a thorough analysis of the number of program staff, related payroll costs, and expected program management consultant services. Yet, a similar staffing assessment or more comprehensive analysis was not done for the 2017 Bond.

Assumption Percentages Applied were Lower than Other Districts Reviewed

The $60 million for program contingency and program management represented approximately 8 percent of program costs, although OSM operational staff and external consultants expressed concerns on the low

figure prior to the bond passage. Specifically, one concern expressed that the program contingency portion was too low at $20 million and not sufficient to cover site specific conditions at Lincoln, Madison, and Benson High Schools. Another concern raised was that at least 6 percent was needed for program management alone and the $40 million estimate for program management did not appropriately include escalation. However, there was no documentation available demonstrating whether those concerns were considered for the options presented to the Board for approval in January 2017.

When compared to other districts in Oregon and California, OSM executive leadership's 8 percent assumption was lower than the other bond programs. For instance, both Beaverton and North Clackamas School Districts in Oregon used factors of 14 and 13 percent, respectively, of total project costs. [21] In dollars, Beaverton School District's program contingency and management was $65 million for its $680 million bond compared to PPS's lower $60 million amount for its larger $790 million bond. Additionally, the Santa Clara Office of Education in California also used a higher factor for its $720 million school construction bond program at 13 percent. [22] Even when considering PPS's own historical experience with its 2012 Bond, staff used a 10 percent factor for program-related costs in 2012—further reinforcing concerns with the reasonableness of the lower percentage used for the 2017 Bond.

[21] Beaverton School District had a $680 million bond passed in 2014. North Clackamas School District had a $433 million bond passed in 2016.

[22] Santa Clara Office of Education had a $720 million bond that passed in November 2018.

Section 2: Additional Cost Information could have Aided Decision Making and Transparency

After compiling and estimating various 2017 Bond project cost scenarios, OSM executive leadership first presented four bond options to the Board on January 24, 2017. At this meeting attended by OSM executive leadership, OSM operational staff, and architects, only high-level cost information was provided in addition to design data and project details. While the level of cost detail was similar to that provided by other districts we reviewed, more comprehensive underlying information could have aided with buy-in and decision-making as well as enhanced transparency of the Bond activities.

Limited Cost Data Was Provided to the Board

First introduced in January 2017, PPS and OSM executive leadership provided the Board with four options for the 2017 Bond for modernization and rebuild projects, health and safety projects, and program-wide efforts as shown in Exhibit 15.

EXHIBIT 15. BOND OPTIONS PRESENTED TO BOARD, JANUARY 24, 2017

Option 1: $790 Million
$324M FOR HEALTH & SAFETY

- Additional health & safety projects $150M
- Modernization & additions
  - Benson $202M
  - Madison $146M
- Full rebuild
  - Lincoln $187M
  - Kellogg $45M
- Management, Contingency & Miscellaneous $60M

Option 2: $867 Million
$347.1M FOR HEALTH & SAFETY

- Additional health & safety projects $150M
- Modernization & additions
  - Benson $202M
  - Madison $146M
  - Lincoln $252M
  - Kellogg $57M
- Management, Contingency & Miscellaneous $60M

Option 3: $745 Million
$310.5M FOR HEALTH & SAFETY

- Additional health & safety projects $150M
- Modernization & additions
  - Benson $202M
  - Madison $146M
- Full rebuild
  - Lincoln $187M
- Management, Contingency & Miscellaneous $60M

Option 4: $810 Million
$330M FOR HEALTH & SAFETY

- Additional health & safety projects $150M
- Modernization & additions
  - Benson $202M
  - Madison $146M
  - Lincoln $252M
- Management, Contingency & Miscellaneous $60M

Source: Board Working Session, January 24, 2017.

For the school modernization and rebuild projects, OSM executive leadership provided documents including project overviews, Master Planning Committee guiding principles, pre-design due diligence reports, health and safety considerations, existing design graphics, and design options. Moreover, OSM executive leadership provided a single-figure estimate for construction and a separate figure for total project costs in addition to narrative and statistics surrounding student capacity, design, and proposed building area in square footage. However, there was no data presented on cost methodology or underlying

cost assumptions. Without information summarizing estimation methodologies used or rationale behind cost assumptions, it is challenging to understand the nuances between the various options proposed or the implications of ultimate decisions.

No Rationale was Found Supporting Various Health and Safety Project Options

For the health and safety projects, PPS executive leadership provided data including a synopsis of the age of PPS school facilities, assessment of facility conditions, cost analysis, possible prioritization methods, and three options for remediating the health and safety needs. Handouts available to the Board listed specific professional cost estimates and technical assessment source documents.

Specifically, PPS executive leadership presented three separate options for the pool of health and safety projects ranging between $100 million, $150 million, and $200 million set aside to address nine types of possible health and safety needs as shown in Exhibit 16. The primary differences between the three cost options were the number of schools that could be funded within a specific category and whether funds for security system projects and seismic projects were included in the three options. However, we could not find a rationale or documentation supporting the various funding options at the $100 million, $150 million, or $200 million levels.

EXHIBIT 16. HEALTH & SAFETY ESTIMATES AVAILABLE TO BOARD, JANUARY 24, 2017

Staff recommendations for additional health & safety projects at 3 cost levels

	$100 MILLION		$150 MILLION		$200 MILLION	
	Dollar amount	Schools funded	Dollar amount	Schools funded	Dollar amount	Schools funded
	$28,492,000	Up to 90	$28,492,000	Up to 90	$28,492,000	Up to 90
	$19,757,939	Up to 13	$25,849,990	Up to 16	$31,757,939	Up to 20
	$9,000,000	Up to 37	$12,000,000	Up to 48	$14,000,000	Up to 58
	$16,623,936	Up to 88	$16,623,936	Up to 88	$16,623,936	Up to 88
	$20,000,000	Up to 5	$50,907,949	Up to 14	$80,000,000	Up to 23
	$5,000,000	Up to 4	$10,000,000	Up to 9	$15,000,000	Up to 13
Rn	$1,126,125	Up to 90	$1,126,125	Up to 90	$1,126,125	Up to 90
	…	…	$5,000,000	Up to 11	$8,000,000	Up to 13
	…	…	…	…	$5,000,000	Up to 2
	…	…	…	…	…	…
	…	…	…	…	…	…

Source: January 24, 2017 Board Bond Work Session Health, Safety, and Modernization Bond handout.

Board Questions Focused More on Design than Cost

After the presentations to the Board, members asked a variety of questions, both general and specific to individual school modernization projects. Most of the questions were related to either the design process, programs to be offered on campus, or other education-related services—but only a few questioning costs. Even for the health and safety projects, questions primarily centered on ADA requirements and whether

project budgets for each of the health and safety categories were distributed equitably around the district. In terms of vetting the cost estimates presented, there were two primary questions—one related to the difference between construction costs and project costs and another related to how costs were allocated to FF&E. Additional Board interaction regarding the costs associated with the four different Bond options involved members stating preferences for the rebuild options as well as the inclusion of the Kellogg Middle School and a brief discussion on bond levy rates.

Also, at two Board meetings in January and February 2017, an external bond marketing consultant presented results from a survey of Multnomah County voters to determine the likelihood of passing a PPS Bond measure on the May 2017 ballot. Results indicated that the majority of voters would support both a $750 million proposed bond as well as an $850 million bond, but the latter could be a tougher sell. Questions asked by the Board included asking for details of voter willingness to approve a bond amount within the proposed $750 to $850 million range, whether alternatives between school rebuild or school modernization had an effect on voter preference, and what level of understanding voters had on how health and safety projects would be addressed within the school modernization projects.

Information Provided was Similar to Most Other Districts Reviewed

While presentations made to the PPS Board did not describe the development of cost estimates, the material presented to the Board was not unlike the approaches used by other school districts we reviewed when they were developing similar capital construction bond programs.

For example, for the North Clackamas School District's $433 million capital construction bond, staff presented three options to its board with cost assumptions and estimations only briefly discussed when the options were presented. Subsequent board meetings in that district focused on the projects included in each of the various bond options, public outreach efforts and levels of support for each option, and administrative efforts necessary to get the bond measure on the ballot—yet, like PPS's bond interactions, these presentations had limited focus on cost. Rather, the information presented was more focused on the higher-level design details of the bond packages as well as the feedback from public engagement efforts.

Similar information was also provided to the Board of Trustees for the Santa Clara Unified School District in California prior to its passage of a $720 million school construction bond in 2018. Beginning in late 2017, staff presented the board with six bond scenarios; like PPS, the presentations did not appear to include a discussion of cost assumptions or methodology. Subsequent board discussions focused on the projects included in each of the various bond options, district debt capacity and effects on property taxes, and timing of placing the bond measure on the ballot. [23]

While it appears that information provided to the PPS Board was consistent with most other districts we reviewed, we believe additional data could be provided in the future such as comparisons of cost estimates with the current market and/or industry standards as well as performance at other districts, where applicable, to better communicate fiscal conditions, potential challenges, and impacts of decisions.

[23] Results based on publicly available documents such as pre-bond communications, board materials, financial reports, and bond status reports.

Section 3: Although Project Estimates Have Increased, PPS Has Been Working on Cost Containment

Estimates to complete the projects for the $790 million 2017 Bond have grown by more than 26 percent to $997 million based on December 2018 forecasts. For the capital school projects alone, estimated costs have increased from $580 million at bond passage to $797 million. With such a significant increase in less than two years since the 2017 Bond passed, delivering all projects proposed to voters within the $790 million budget has been challenging.

However, there has been significant activity at Lincoln, Madison, and Benson High Schools as well as Kellogg Middle School with OSM operational staff evaluating master plans, refining designs, performing revised cost estimates and preparing for construction. Specifically, immediately after the 2017 Bond passed, OSM commissioned updates to master planning documents for all four schools with the intent to refine design concepts and better align cost estimates with current market conditions. According to current OSM executive leadership, practices have changed since the 2017 Bond budgets were developed in late 2016 and early 2017 and emphasis has been placed on formalizing cost estimation methodologies and developing realistic budgets. [24]

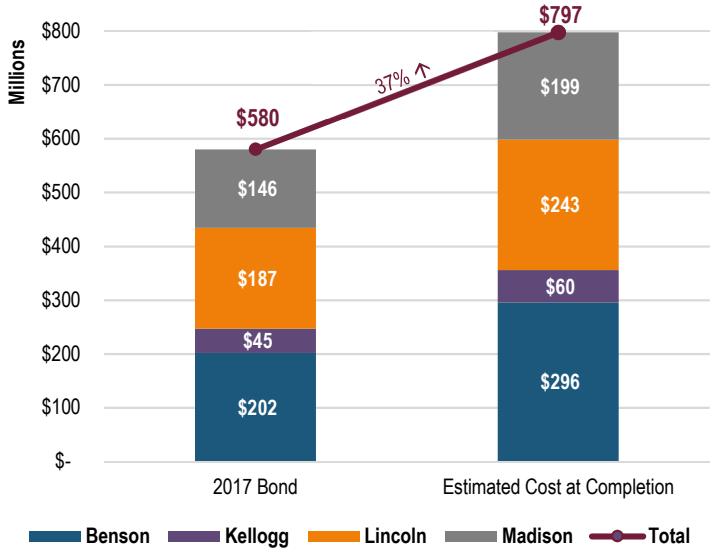
In addition, while fluctuations in cost estimates are typical as projects advance through various stages of planning and design, OSM has initiated cost containment efforts that include revisiting design decisions through focused value engineering sessions and obtaining updated independent cost estimates. Nonetheless, bridging the budget gap may also require eliminating scopes or defer projects to future bond measures. In fact, the Benson High School project is now expected to be completed with the next bond.

Estimated Costs to Complete School Projects Have Increased Nearly 37 Percent Since the Bond Passed

As projects advance through the various stages of their lifecycle and designs become more refined, estimates of project costs are updated to reflect current scopes and budgets. For the four schools, total capital project budgets were updated as part of typical project milestones such as master planning, schematic design, design development, and construction documents. Based on data as of December 2018 from OSM's e-Builder system, the school modernizations are now expected to cost $797 million when completed—37 percent, or $217 million more than the $580 million estimated for the 2017 Bond as shown in Exhibit 17.

[24] Assertions will be corroborated in future audits.

EXHIBIT 17. 2017 BOND BUDGET VS. ESTIMATED COST AT COMPLETION, AS OF DECEMBER 31, 2018



Source: Board Working Session Meeting Packet, January 24, 2017. Program Management Cost Report from OSM e-Builder system, with data as of December 31, 2018.

Because project pricing is closely tied to market conditions, market volatility and assumptions used to predict that volatility—such as escalation—can have a significant impact on cost estimates. As discussed in Section 1 of this report, former OSM executive leadership used escalation factors that were lower than market when developing the 2017 Bond budget, which could be a contributing factor for the variances between January 2017 and December 2018 estimated costs. Specifically, the revised estimates reflected escalation and contingency cost factors that were more considerate of market conditions. However, many additional factors such as scope additions, design modifications, schedule changes, shortage of skilled labor, availability and pricing of materials, or updates to education specifications (Ed Specs) could also affect increases in cost estimates.

Comprehensively identifying and reconciling reasons for the estimated cost increase is a significant effort that the audit could not undertake for this report. Such an endeavor would involve comparing assumptions used across various milestones and projects, reconciling line item amounts to subcontractor bids, reviewing detailed design specifications, and assessing the impact of unique design changes and other cost savings efforts on cost estimates that requires a level of site-specific knowledge and project familiarity that is beyond the scope of this phase of the audit. Yet, as warranted and practical, additional work and analyses may be conducted in this area as part of subsequent audits.

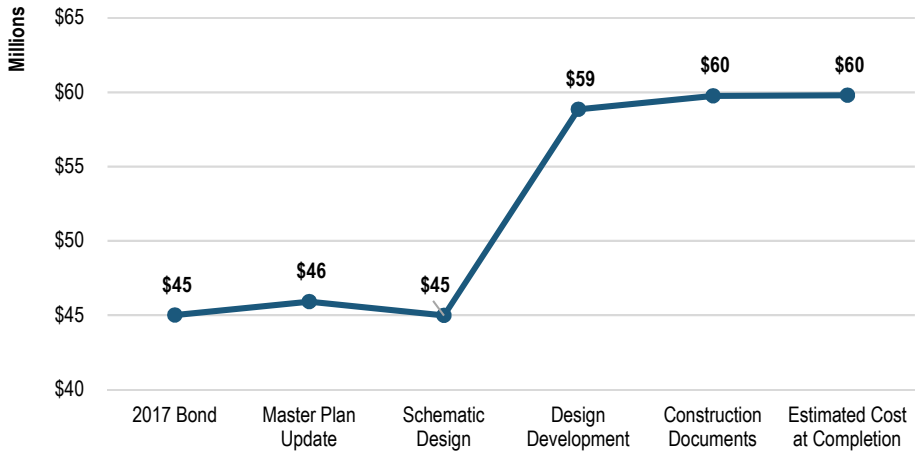
Fluctuations in Cost Estimates are Typical During Early Planning and Design

Despite the various important discussions surrounding budget increases, cost estimates, and cost containment, it is not unusual for capital project cost estimates to increase or decrease as projects progress through the various project delivery stages as scopes and quantities become more refined and are adjusted to align with changing needs or available funding. Even when a project enters the construction phase, costs

could increase again due to higher construction bids or unforeseen conditions faced during actual construction—ultimately impacting the total project cost at completion.

For instance, the Kellogg Middle School capital project, which will be the first of the four schools to start construction in the fall of 2019, was estimated to cost $45 million when the Bond passed in 2017, but latest OSM estimates identified the total cost to complete Kellogg at $60 million as shown in Exhibit 18.

EXHIBIT 18. KELLOGG MIDDLE SCHOOL EXAMPLE SHOWING TOTAL PROJECT COST ESTIMATES AT SELECT MILESTONES



Source: Kellogg updated Master Plan completed November 20, 2017; 90% Schematic Design completed April 12, 2018; Design Development completed July 16, 2018; 50% Construction Documents completed December 17, 2018; Estimated Cost at Completion per e-Builder as of December 31, 2018.

While Recent Cost Estimates were Higher than 2017 Bond, OSM is Working on Cost Containment

With estimated costs to deliver the projects rising since the Bond passed in May 2017, OSM operational staff have been continually challenged to identify cost saving measures while still delivering the projects in accordance with PPS Ed Specs approved by the Board and the needs of the community. Since all of the projects were still in the early planning phase when the 2017 Bond passed, there has been opportunity for OSM to explore cost containment options through various value engineering efforts— a standard industry-wide technique used to identify alternatives to control costs prior to completion of design and before the start of construction. [25]

For instance, when the 90% Schematic Design for the Kellogg Middle School project identified a $13 million difference between the design and construction budget, an external architect worked with OSM operational staff to explore options to bridge the gap. [26] Ideas generated included substituting grass for a synthetic turf system to reduce costs by $412,000 and reconfiguring the school as a 3-story building instead of a 4-story structure by reducing certain programs for a savings of approximately $1.5 million. These and other similar

[25] The CMAA states that value engineering is used for the purpose of optimizing value in project designs. It is best completed during the initial preliminary design stage.

[26] Kellogg 90% Schematic Design Document, April 2018.

considerations for the Kellogg Middle School designs eventually narrowed the gap between the budget and cost estimate from $13 million to $824,000.

Also in-line with leading practices, OSM held a value engineering workshop in December 2018 for the Lincoln High School project that identified $29.5 million in cost saving opportunities. Building upon the success of the Lincoln High School value engineering workshop, OSM intends to go forward with value engineering efforts with the next one scheduled in May 2019 for the Benson High School project.

In addition, as of December 31, 2018, only $50.8 million of the $790 million Bond has been spent or committed for the four schools as shown in Exhibit 19. With that in mind, there is still time for PPS oversight bodies, OSM, and stakeholders to collaboratively work together towards delivering modern facilities that address the needs of the District's educational goals within the budgetary constraints set by the 2017 Bond—or determine that some 2017 Bond projects may have to be delayed and delivered as part of subsequent bond cycles or reduced scopes may have to be considered. In fact, the completion of the Benson High School project has already been deferred to the next bond due to the projected funding shortfall.

EXHIBIT 19. BUDGET TO ACTUALS AND ESTIMATED COST AT COMPLETION, AS OF DECEMBER 31, 2018

	Status as of December 2018	Actual Expenses through December 2018	Commitments (Encumbrances) as of December 2018
Kellogg	50% Construction Documents	$ 4,316,952	$ 6,262,444
Madison	100% Design Development	$ 6,625,849	$ 14,234,869
Benson	Master Planning	$ 519,380	$ 3,585,596
Lincoln	75% Schematic Design	$ 2,368,891	$ 12,845,908
Total		**$13,831,072**	**$36,928,817**
		$50,759,889	

Source: OSM e-Builder 'Cost Summary - Budget vs. Commit vs. Actuals Paid' Report; OSM e-Builder "Project Management Cost Report – by program".

Section 4: Conclusions and Recommendations

During the audit, we primarily focused on PPS and OSM activities in late 2016 and early 2017 leading up to the Bond passage. Given that the scope of this audit was limited to assessing the development of cost estimates for the $790 million Bond, conclusions drawn and areas suggested for PPS and OSM consideration were based on currently available data and practices in place for that time period. While we found that initial cost estimates used to develop the 2017 Bond were generally supported by professional estimates and followed a consistent process, final cost estimate figures presented to the Board for bond approval were lower than market conditions at that time and could not be replicated due to lack of a formal, documented methodology.

However, current OSM executive leadership has asserted that many protocols have changed since that time and practices recommended from this audit are now in place. These subsequent changes and revised practices will be verified as part of the next audit phase or future annual Bond performance audits.

Recommendations

While OSM operational staff stressed the importance of a bond cost estimation methodology that is understandable and traceable to underlying assumptions and records, the cost data presented to the PPS Board for approval of the 2017 Bond lacked data to allow for a replication of the figures used by OSM executive leadership. To better align cost estimates with prevailing market conditions and industry leading practices, OSM should have developed a formal cost estimation methodology for use on all projects, documented deviations from standard practice, and established a central location to retain all final cost estimates including any supporting documentation used to develop each estimate. However, current OSM executive leadership stated that it now ensures its project estimates use factors that align with market conditions and better documents results of cost decisions. Since we have not yet had an opportunity to verify current practices, we recommend that, on a go-forward basis, OSM should begin or continue to:

1. Develop and consistently apply a formal cost estimation methodology across projects regardless if developed in-house or by external consultants, including documentation of the reasons for any deviations from the established methodology.
2. Compare and analyze cost estimate assumptions and factors with historic practices and other comparable bonds or districts to determine whether adjustments to estimation methodology seem warranted.
3. Establish a central location to retain final estimates at each project phase (master planning, schematic design, design document, construction document), including any supporting documentation used to develop each estimate.

In addition, more comprehensive data could have been provided to the Board when discussing cost estimates such as comparisons of estimates with market and/or industry standards as well as performance at other districts, where applicable, to better communicate fiscal conditions, potential challenges, and impacts of decisions. Thus, to enhance transparency and Board knowledge, OSM should:

4. Discuss comparison of cost estimation methodology used with past PPS experiences, current market conditions, and estimates developed by peer districts when presenting cost estimates to the Board and public stakeholders.
5. Categorize the reasons for variances in project costs, and aggregate those changes to the program-level to provide information on why costs varied from original bond, as well as report this information to the Board and public stakeholders.

Finally, in light of the increased scrutiny PPS is experiencing with its cost estimates, OSM should identify key cost drivers and closely monitor trends that could impact funding available for PPS bond projects. Trends with increased program financial risk should be captured, analyzed, and presented to the Board and general public along with scenarios to mitigate risks or options to minimize negative impacts resulting from cost estimates coming in higher than expected. Following are some recommended actions for considerations to assist OSM in responding to changing construction market conditions and strengthen transparency and accountability. Specifically, OSM should:

6. Conduct an analysis to determine to what degree various factors, especially scope changes and changes in construction costs, caused an increase in construction costs for the 2017 Bond projects. This could include comparing assumptions used across various project milestone reports and/or reconciling line items amounts to subcontractor bids.
7. Analyze results of variances to make adjustments to future estimation models and methodology as well as to analyze whether changes are needed in the delivery of projects to ensure stronger cost containment.
8. Ensure project milestone reports use consistent data across all projects and clearly identify deviations.

Appendix A: Auditee Response

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Mailing Address: P. O. Box 3107 / 97208-3107

Date: **April 4, 2019**

To: Cathy Brady, Principal
Sjoberg, Evashenk & Associate

From: Dan Jung, Chief Operating Officer

Subject: Performance Audit – Fiscal year 2018/2019
Phase I Report
Staff Response

Portland Public Schools (PPS) and the Office of School Modernization (OSM) have received and reviewed Sjoberg, Evashenk and Associates (SEC) 2018/2019 March 2019 Audit Report titled "Performance Audit – Fiscal Year 2018/2019, Phase I Report: Bond Cost Estimates" (the Report). PPS appreciates the significant amount of data and documentation SEC reviewed in a short period of time to produce the Report. PPS also appreciates the thoroughness of the Report, the thoughtful conclusions and recommendations and the professionalism of the SEC staff.

As noted in the Report, PPS has already concluded and addressed many of the recommendations provided. PPS has prepared short responses to each of the recommendations.

SEC Recommendation #1: Develop a formal cost estimation methodology and apply consistently across projects regardless if developed in-house or by external consulates, including documentation of the reasons for any deviations from the established methodology.

PPS Response: PPS agrees with this recommendation. As evidenced in the materials that are routinely provided to the Board of Education for master planning and other project updates, OSM utilizes has a consistent methodology for conveying detailed project cost information. The approach includes providing a summary breakdown of the detailed cost estimate generated by a professional construction cost estimator, plus all additional costs (with noted assumptions for each item) that sum the project total. OSM provides this level of detail on all modernization and new construction projects to convey a high level of transparency and provide rationale behind the noted assumptions. Examples of this methodology and format can be seen in the master plans brought forward to the Board of Education for Kellogg, Madison, Lincoln and Benson. This same level of detail will be employed on future bond planning efforts.

SEC Recommendation #2: Compare and analyze cost estimate assumptions and factors with historic practices and other comparable bonds or districts to determine whether adjustments to estimation methodology seem warranted.

PPS Response: PPS agrees with this recommendation. As noted on page 29 of the Report, OSM operational staff stressed the importance of a bond cost estimation methodology that is understandable and traceable to underlying assumptions and records. OSM staff understands the value of providing cost data that is founded in professional support, reviewed and vetted prior to being developed into a recommendation. Future bond planning efforts will include professionally developed cost estimates and robust review of all cost assumptions.

SEC Recommendation #3: Establish a central location to retain final estimates at each project phase (master planning, schematic design, design document, construction document), including any supporting documentation used to develop each estimate.

PPS Response: PPS agrees with this recommendation. Currently OSM utilizes a "design phase approval" process that captures specific detailed project data at the end of each design phase including the current building plans (floor plans, elevations, etc), cost estimates, available contingency, current schedule status, stakeholder engagement plans, etc. All of this information is reviewed and stored electronically in OSM's project management software system for future use and reference. All 2017 bond modernization projects have, or will, complete a design phase approval at the end of each design phase including master planning, schematic design, design development, and construction documents.

SEC Recommendation #4: Discuss comparison of cost estimation methodology used with past PPS experiences, current market conditions, and estimates developed by peer districts when presenting cost estimates to the Board and public stakeholders.

PPS Response: PPS agrees with this recommendation. Similar to Recommendation #2, OSM understands the value of developing informed and vetted cost data. Future bond planning efforts will include robust review of all cost assumptions and comparisons to other relevant and comparable projects and programs.

SEC Recommendation #5: Categorize the reasons for variances in project costs, and aggregate those changes to the program-level to provide information on why costs varied from original bond, as well as report this information to the Board and public stakeholders.

PPS Response: PPS agrees with this recommendation. In November 2018 OSM prepared two documents for the Bond Accountability Committee's review. One document compared PPS project costs to other relevant K-12 projects nationally; the second document provided a detailed cost breakdown of Madison and Lincoln, broken down by individual Construction Specification Institute (CSI) division and compared each division of work to recently PPS projects: Roosevelt, Franklin and Grant. Additionally, OSM staff highlighted individual cost variances between the projects and provided a division by division analysis of the costs and provided reasons for the variances. In an effort to provide additional outside review of PPS project costs, in January 2019 OSM hired professional construction cost estimating firm, Rider Levell Bucknall, to compare current PPS project costs to other relevant K-12 projects.

SEC Recommendation #6: Conduct an analysis to determine to what degree various factors, especially scope changes and changes in construction costs, caused an increase in construction costs for the 2017 Bond projects. This could include comparing assumptions used across various project milestone reports and/or reconciling line items amounts to subcontractor bids.

PPS Response: PPS agrees with this recommendation. Similar to Recommendation #5, over the last 12 months OSM has provided detailed project cost comparison data and continues to develop and provide cost information as necessary and requested.

SEC Recommendation #7: Analyze results of variances to make adjustments to future estimation models and methodology as well as to analyze whether changes are needed in the delivery of projects to ensure stronger cost containment.

PPS Response: PPS agrees with this recommendation. Future bond planning efforts will include robust review of all cost assumptions and comparisons to other relevant and comparable projects and programs.

SEC Recommendation #8: Ensure project milestone reports use consistent data across all projects and clearly identify deviations.

PPS Response: PPS agrees with this recommendation. OSM utilizes standard operating procedures to ensure consistency between projects. Each project utilizes a project update template each month to report on project status. Similarly, regular reporting structures are utilized for the Bond Accountability Committee and quarterly project updates to the Board of Education. PPS and OSM will continue to incorporate feedback to improve on processes and procedures.

Portland Public Schools

2017 Bond Performance Audit *(Phase 2)*

Performance Audit – Fiscal Year 2018/2019
Final Report: 2017 Bond Program

August 2019

SJOBERG EVASHENK CONSULTING, INC

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Executive Summary

Since Portland voters passed the 2017 School Improvement Bond (Bond), Portland Public Schools (PPS) and its Office of School Modernization (OSM) faced many challenges including high turnover in executive leadership positions and a tight construction labor market. Concerns with 2017 Bond budget estimates increased public scrutiny on the Bond program and pressure to successfully deliver the Bond projects as promised to voters.[1]

For the areas reviewed, OSM made notable efforts refining project cost estimates and finalizing designs to move forward with implementation and delivery of the 2017 bond projects. These efforts included improved cost estimation methodology, more formal protocols for involving internal and external stakeholder groups during project planning and design, revised program management and standard operating procedures, and the use of lessons learned from delivering the 2012 Bond program on the 2017 Bond projects.

We also found some improvements are needed to strengthen financial practices, uniformity in project delivery approaches, and accountability behind project decisions made. Key results and recommendations are summarized in the sections that follow and full recommendations are listed in the body of the report at the end of each section.

2012 Bond Projects Were Delivered as Promised

By the summer of 2019, all projects envisioned by the 2012 Bond will be completed on schedule and as promised to voters. Although expenses as of June 2019 were more than the $482 million Bond budget, mainly due to Board of Education (Board) directives increasing building size and capacity, PPS was able to secure additional funds. However, prior audits noted some project management issues that remain unresolved.

KEY RESULTS:

- Additional funding totaling nearly $116 million helped offset unexpected project costs.
- OSM needs to address project management issues noted in prior bond audits.

RECOMMENDATIONS:

1. Develop a written plan for establishing and prioritizing corrective actions needed to address project delivery issues related to change orders, contractor invoices, and other recommendations noted in prior audits of 2012 Bond projects. This plan, at the minimum, should identify:
   - OSM's position with regard to the recommendation (agree/disagree);
   - How OSM will implement the recommendations (as stated, implement differently, or reasons for not implementing);
   - Target implementation dates;
   - Process owners (staff responsible for addressing recommendations);
   - Actions taken to address issues and recommendations noted; and
   - Protocols for communicating status updates to the Bond Accountability Committee and/or the Board.

[1] The first performance audit report for the 2017 Bond, addressing the Bond budget development was presented at the April 15, 2019 PPS Board meeting. It is available on the PPS website: https://www.pps.net/cms/lib/OR01913224/Centricity/Domain/62/4-25-19%20Bond%20Audit%20Report.pdf.

Most 2017 Bond Projects are On-Schedule, but will Cost More to Complete

As of June 2019, OSM made good progress on the planning and design of all four school capital projects with Kellogg Middle School and Madison High School in the construction phase, design for Lincoln High School well-underway, and the master plan for an expanded Benson High School approved by the Board. In addition, construction for health and safety projects has started, with the final projects estimated to be completed by 2023. Yet, more funding is needed to build the schools as promised.

KEY RESULTS:

- Approximately $280 million of additional funding is needed to build schools promised.
- Increased construction costs and low initial bond budget estimates resulted in insufficient funding available to complete the Benson High School.

RECOMMENDATIONS:

2. Develop a written plan or strategy for identifying and incorporating additional funding options if future bond funds are not available and regularly communicate and discuss progress with the Board and Bond Accountability Committee.

Cost Estimation Practices Improved and Financial Management was Sound, Although Small Enhancements Would Strengthen Processes

OSM has improved its cost estimation practices subsequent to the 2017 Bond passage, and exercised appropriate financial management over bond funds. However, cost estimation documentation can still be improved and controls over contractor invoices can be enhanced and strengthened to ensure critical financial reconciliations are timely completed.

KEY RESULTS:

- Capital project cost estimation generally followed an established methodology.
- PPS generally had effective controls in place over bond spending, although it was behind on financial reconciliations.
- e-Builder construction management system controls were appropriate, although related business processes can be strengthened over project invoice review.
- Bond fund investments appeared well-managed.
- New cash flow processes will better align with project needs, once implemented.

RECOMMENDATIONS:

3. Ensure cost estimates are fully documented with underlying support and rationale used for soft costs and FF&E—in addition to other cost components—including variations or deviations from stated methodology.
4. Implement the new cash flow planning process as intended at the start of Fiscal Year 2019/2020, and update cash flows regularly.
5. Immediately allocate and concentrate efforts on completing overdue Fiscal Year 2018/2019 reconciliations between the e-Builder construction management system and the PeopleSoft financial system, as well as ensure future reconciliations are regularly performed in a timely manner.

Bond Program Delivery Framework and Document Management Practices Should Be Standardized and Formally Implemented

OSM followed certain project planning and design activities that aligned with best practices, although it could place greater emphasis on standardizing bond delivery policies and strengthening management of bond practices to ensure data is valid, current, accessible to project teams, and maintained.

KEY RESULTS:

- OSM project teams focused on transparency and accountability, vetted design decisions, and sought stakeholder buy-in.
- Updates to the October 2017 program management plan (PMP) were still in progress and not expected to be completed until late 2019.
- Project specific team management plans, meant to be completed prior to the start of design and intended to guide the execution of the capital school construction projects, were in draft format for three of the four school projects.
- Stronger document management practices are needed as we found project documents were maintained in multiple systems, not all key team members had access to systems used to manage projects, and project documents were not always easy to locate.
- Certain design phase activities aligned with best practices including updating the program management plan and developing project team management plans (PTMPs), although more structure is needed to better track deviations from Educational Specifications or Design Standards and clarify what value engineering decisions should be elevated.

RECOMMENDATIONS:

6. Update and re-issue the PMP, in addition to individual school PTMPs, as well as consider developing quick tools, guides, and checklists to help project teams implement the protocols identified in the PMP and PTMPs.
7. Formally communicate, clarify, and train OSM project teams and individuals involved with project delivery on existing document management protocols including requirements and expectations for usage by considering the following:
    - Identifying the documents each project should maintain during each phase of project development;
    - Determining a standard location and specific systems to be used for in-progress and final versions of capital project documents where key project team members of the OSM team, as well as non-PPS employees, have access;
    - Establishing a new or refining the existing standard hierarchy across projects detailing the specific folders to be used as well as expected contents of each folder; and
    - Developing a uniform naming and numbering convention for each document across all capital projects.
8. Standardize design deviation logs by identifying consistent information to be maintained for each project and ensure approvals are documented.
9. Establish a tracking mechanism to store proposed changes to Ed Specs and Design Standards in an accessible location.
10. Supplement the “Decision-Making Hierarchy” process with written guidance on what decisions to bring forward and elevate beyond the project team as well as train project teams on standard practice for value engineering deviations—as well as Ed Spec and Design Standards deviations.
11. Better document lessons learned by:
    - Categorizing lessons learned log items into separate subcategory sections allowing project managers to more easily identify relevant items; and
    - Summarizing lessons learned and regularly distribute or discuss items with project teams.

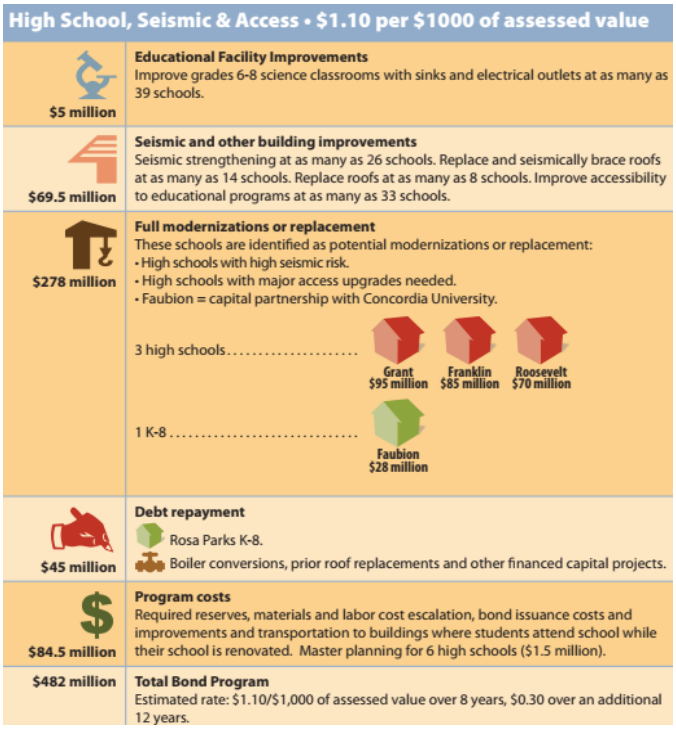
Introduction and Background

As the largest school district in Oregon with more than 49,000 students and approximately 80 schools with an average age of 77 years old, Portland Public School (PPS) implemented a series of school construction bonds to fund capital improvement projects and upgrade all PPS schools over a 30-year period based on recommendations from a Citizens' Advisory Committee.[2,3] To date, Multnomah County voters passed two major bond programs to fund these school improvements—one in 2012 and another in 2017.

2012 Bond Modernization Program

When voters passed the first major school improvement bond in 2012 (2012 Bond), they provided PPS with $482 million towards upgrading aging infrastructure at schools across the district including Grant, Franklin, and Roosevelt High Schools and Faubion Elementary School in addition to a series of building improvements at other district schools as shown in Exhibit 1. This was the first major construction bond to modernize or build new schools passed by voters in nearly half a century, although a smaller 1995 bond was passed for school seismic improvements.

EXHIBIT 1. 2012 BOND PROGRAM COMPONENTS



Source: 2012 Bond Fact Sheet, July 9, 2012 from PPS Website.

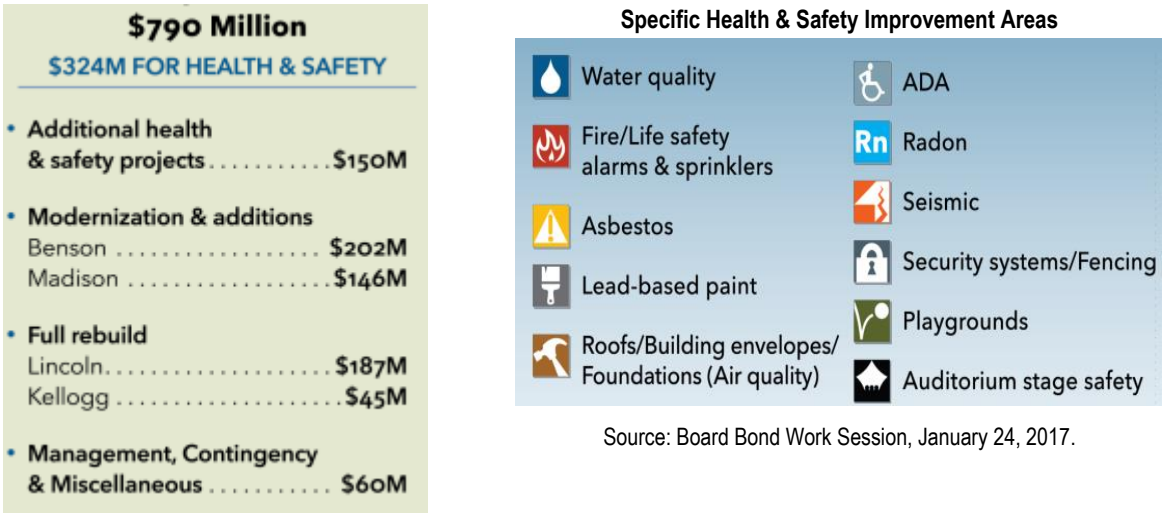
[2] According to the Proposed Health, Safety and Modernization Bond Frequently Asked Questions published on the PPS website, some schools were built more than 100 years ago and more than half were built before 1940. Before the prior 2012 Bond, only two schools had been built in the last 35 years.

[3] The Citizens' Advisory Committee—consisting of parents, teachers, business leaders, community members, and construction experts—was established pre-Bond and is not the same body as the Bond Accountability Committee established after the 2012 Bond passage.

2017 Bond Modernization Program

Five years later in May 2017, Multnomah County voters approved another school bond (2017 Bond), the largest bond in state history. As shown in Exhibit 2, the measure funded $580 million in renovations at Benson and Madison High Schools and full rebuilds of Lincoln High School and Kellogg Middle School, as well as $150 million for a series of health and safety projects improvements at other schools within the PPS district. Approximately one-third of the budgets for each high school and middle school project also included funds to address health and safety issues at those specific schools as well. Additional funding was set aside to provide master planning for future capital upgrades and improvements of Cleveland, Jefferson, and Wilson High Schools as part of $60 million in program contingency and program management.

EXHIBIT 2. 2017 BOND PROGRAM COMPONENTS



Source: Board Bond Work Session, January 24, 2017.

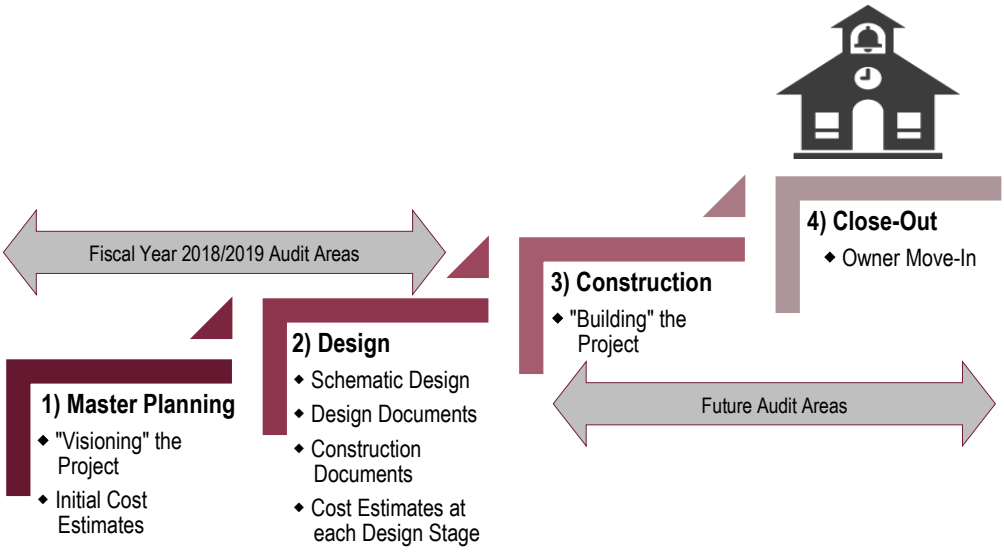
With combined 2012 and 2017 bond funds totaling $1.27 billion, OSM was tasked with quickly establishing and deploying a comprehensive framework for planning, managing, and delivering capital projects on a scale it had not experienced in nearly half-a-century.

School Capital Project Delivery Phases

Planning and implementing a capital construction project is a complex endeavor with several different phases and many different players involved at each phase. Best practices suggest activities at the program-level such as developing a formal program framework establishing roles and responsibilities in program management plans, setting standard planning and tracking tools, estimating costs and managing cash flow, and identifying key systems to use for document retention.

Additionally, there are many activities typically involved at the project-specific level. Exhibit 3 illustrates the primary phases and general activities of a capital improvement project including master planning, design, construction, and close-out.

EXHIBIT 3. KEY PROJECT DELIVERY PHASES



Source: Auditor-generated based on interviews, process walk-throughs, observations, and documentary review.

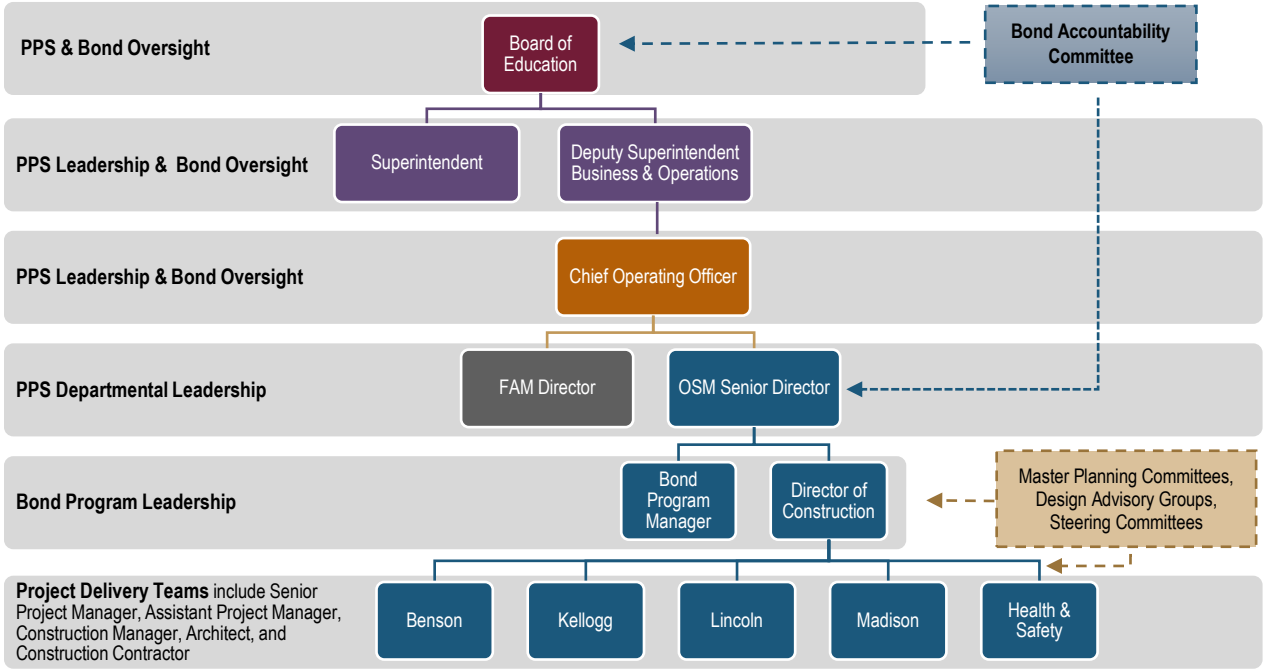
During the period of our audit between April 2017 and March 2019, the 2017 Bond capital school construction projects were still in the master planning or design phases. As such, auditors focused on OSM practices related to activities during those project delivery stages. This included reviews of project cost estimation practices, financial management, and program delivery framework as described in more detail in the "Scope and Methodology Section" of this report. As bond projects advance into construction and close-out phases, future annual audit work will place greater emphasis on those areas.

Key Bond Delivery Partners

In addition to its general education focus, PPS is also accountable for the implementation of the bond capital improvement projects and maintenance of school buildings. Within PPS, the Office of School Modernization (OSM) is primarily responsible for the direct administration, management, and implementation of the 2012 and 2017 Bonds as guided by the OSM Senior Director, Bond Program Manager and Director of Construction. The Bond Program Manager and Director of Construction provide program level oversight across project teams, ensuring each project is delivered consistent with OSM

policy and the promises made to voters. Project teams typically consist of a senior project manager or project manager, assistant project manager, and construction manager. Another PPS division—Facilities and Asset Management (FAM)—is responsible for school maintenance once project construction is complete and provides input and guidance to OSM during the design and construction process to ensure that those responsibilities can be met. To oversee all bond activity, the PPS Board of Education (Board) and a citizen's Bond Accountability Committee (BAC) meet regularly on bond progress and OSM seeks external input from a number of school and community stakeholder groups involved during master planning and design such as Master Planning Committees, Design Advisory Groups, and Steering Committees for each school project as shown in Exhibit 4.[4]

EXHIBIT 4. KEY BOND DELIVERY PARTNERS, AS OF JUNE 2019



Source: Auditor-generated based on interviews, process walk-throughs, observations, and documentary review.

[4] PPS Board is the decision-making body tasked with ensuring bond mandates are fulfilled. The BAC provides advice and technical expertise to the Board and OSM on all bond matters.

Scope and Methodology

The Portland Public School District (PPS) hired Sjoberg Evashenk Consulting in October 2018 to conduct annual performance audits of the 2012 and 2017 School Improvement Bonds over a four-year period. To establish the initial audit plan and objectives, Sjoberg Evashenk Consulting interviewed PPS executive leadership, operational staff, and external stakeholders; gathered and reviewed initial documents; and performed a high-level risk assessment.

Over the course of the multi-year audit cycle, auditors will assess performance on a variety of bond areas. An audit work plan developed at the end of each audit cycle will guide the work of the following year's audit, although specific focus areas may change as the audit progresses. For the current audit, we reviewed bond program activities for the extended period between April 1, 2017 and March 31, 2019 related to cost estimates, schedule, finances, project management, design, value engineering, and turnover. The 2017 Bond health and safety program component was not a specific focus of this year's audit scope.

Results for the 2018/2019 audit cycle are reported under two separate audit reports. The first performance audit report focused on initial bond cost estimates developed prior to passage of the 2017 Bond and was issued in April 2019.[5] For this second performance audit report, our objectives were as follows:

1. Determine whether PPS delivered the Bond programs on-budget, on-schedule, and as promised given the status of 2012 and 2017 Bond projects.
2. Assess how well PPS is managing the Bond at the program level related to:
    a. Budget and cost estimation
    b. Financial management
    c. Project management
    d. Systems and records
    e. Master planning and design
    f. Staffing and turnover
3. Where applicable and practical, compare PPS activities against construction industry leading practices and other school districts.

To meet our objectives, Sjoberg Evashenk Consulting performed a variety of audit tasks including, but not limited to, the following:

- Conducted in-depth interviews with key personnel including the Chief Operating Officer, OSM Senior Director, Chief Financial Officer, Treasury Manager, Senior Bond Accountant/Analyst, senior project managers and assistant project managers, project directors, construction managers, various Facilities and Asset Management employees, and PPS human resource staff to understand and assess policies, practices, and tools in place regarding all aspects of delivering the Bond program.

[5] The first performance audit report for the 2017 Bond was presented at the April 15, 2019 PPS Board meeting and is available on the PPS website: https://www.pps.net/cms/lib/OR01913224/Centricity/Domain/62/4-25-19%20Bond%20Audit%20Report.pdf.

- Analyzed and assessed documents such as budget data maintained in PPS' e-Builder system, financial data maintained in PPS' PeopleSoft system, Primavera schedules, systems and document retention used, master planning documents, value engineering records, Educational Specifications (Ed Specs), Design Guidelines, deviation tracking logs, and documented lessons learned.
- Obtained and reviewed current cost and schedule information for both the 2012 and 2017 Bond improvement projects from PeopleSoft system, Primavera schedules, e-Builder system, Bond Accountability Committee status reports, and board packets.
- Evaluated post-bond cost estimation methodology, current cost estimates, and underlying support for each cost element of the four 2017 Bond high school and middle school capital projects including hard cost, soft costs, FF&E, swing and temporary facilities, contingency, and cost escalation.
- Reviewed PPS' cash management policy and met with the Treasury Manager to evaluate PPS' management of bond funds and current investment practices. Assessed required quarterly financial reports submitted to the Board to determine if reporting was consistent with the cash management policy.
- Reviewed the automated approval workflows for establishing project budgets and approving project expenditures in the e-Builder system as well as tested a sample of 2017 Bond project expenditures for approval and allowability with bond provisions.
- Evaluated OSM program and project management practices against industry standards, where available, and identified any gaps in controls or existing policies and procedures.[6]
- Identified and evaluated systems and tools used to capture program and project data and commented on official and unofficial systems used, types of data maintained, frequency of update, consistency, completeness, and access.
- Assessed record retention practices, access, and availability of data for official, final, and in-progress records as well as project filing structure, version control, and location of official records.
- Analyzed updated master planning documents, schematic designs, design development documents, draft construction documents, and deviation logs for the four 2017 Bond high schools and middle school capital projects.
- Performed a high-level comparison of capacity and categorical components of current PPS Ed Specs to those at the Beaverton School District and the North Clackamas School District.
- Reviewed data on turnover among OSM staff and senior leadership as well as PPS executive leadership, and calculated the number of departures among both all non-teaching employees and exempt employees. Additionally, we determined the number of departures among senior leadership positions within PPS and OSM since the development of the 2017 Bond in February 2017.

[6] Industry best practices were drawn from a variety of sources including the Construction Management Association of America (CMAA) Construction Management Standards of Practice, Project Management Body of Knowledge (PMBOK) Construction Extension, and Sjoberg Evashenk Capital Construction Program Audit Library.

- Followed-up on the status of prior 2012 Bond performance audit recommendations focusing on those recommendations categorized as open from audits conducted between 2014 and 2017. Where applicable and within the scope of this audit cycle, verified auditee responses through fieldwork analyses, observations, and documentary review. Implementation status of areas not within the scope of this year's audit will be reviewed during future performance audits.
- Reviewed and analyzed issues, recommendations, and corrective actions resulting from construction audits conducted by an external party on the 2012 Bond projects at Roosevelt High School and Franklin High School.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Section 1: 2012 Bond Projects were Delivered as Promised

When Grant High School reopens for the 2019/2020 school year, OSM will have completed all 2012 Bond projects generally on schedule, within budgeted resources, and as promised to voters in November 2012.[7] Although final costs will be higher than the $482 million in bonds approved by voters, PPS was able to secure additional funding to complete the 2012 Bond program and build larger schools than initially envisioned. However, audits performed on the 2012 bond projects highlighted some project management issues that remain unresolved.

OSM Secured Additional Funding that Offset Unexpected Costs

Although the 2012 Bond was delivered as promised to voters, there were unanticipated cost increases mostly based on Board-approved direction to increase school size after the bond passed. Specifically, the Board adopted a resolution in November 2013 increasing core student capacity at Roosevelt, Grant, and Franklin High Schools from 1,500 to 1,700 students and expanding school size square footage.[8] While adding square footage inherently increased project costs, OSM was able to successfully design and build schools with the additional capacity to keep pace with the growing enrollment needs of the district. Additional factors that contributed towards higher costs were construction cost escalation that outpaced projections and several large change orders due to unforeseen conditions encountered during construction at the historic Franklin High School and Roosevelt High School sites.[9]

Fortunately, OSM secured approximately $115.8 million in additional funding that supplemented the $482 million bond and constructed larger buildings as requested by the Board. Of that $115.8 million, bond premiums and interest revenue totaled $61 million, or 53 percent—representing the largest additional funding stream. Other private contributions and donations as well as local grant funds totaling approximately $54.8 million allowed the 2012 Bond to absorb the unexpected budget increases as shown in Exhibit 5 that follows.

In addition to the capital school projects, the 2012 Bond also set aside $5 million to improve science classrooms at up to 39 schools and another $69.5 million to replace and seismically brace roofs and improve accessibility at as many as 33 schools. These improvement projects were completed while students were on summer break over a four-year period between 2013 and 2016.

[7] Memorandum by OSM to the Board on November 19, 2012 envisioned all capital school projects to be completed by the summer of 2019.
[8] Board Resolution No. 4840, November 18, 2013.
[9] 2012 Bond Performance Audit Report, issued June 2017, p.30-37.

EXHIBIT 5. 2012 BOND BUDGET STATUS, AS OF JUNE 19, 2019 (AMOUNTS IN MILLIONS)

Bond Component	Original Bond Amount	Estimated Cost at Completion [C]	Auditor Comments
Faubion Elementary School [A]	$28.0	$49.9	The difference of $112.4 million between the amount passed by voters and the current estimate to complete the program is covered by other funding sources totaling $115.8 million as follows: • Bond Premium $ 56.9 million • Interest Earned $ 4.1 million • Concordia University Donation for Faubion $ 15.5 million • Other (gifts, grants, general fund) $ 39.3 million **Total: $ 115.8 million**
Franklin High School	$85.0	$112.8	
Grant High School	$95.0	$158.7	
Roosevelt High School	$70.0	$100.7	
Sub-Total Capital Schools Projects	$278.0	$422.1	
Educational Facility Improvements	$5.0	$85.3	
Seismic & Other Building Improvements	$69.5		
Program Cost [B]	$84.5	$42.0	
Debt Repayment	$45.0	$45.0	
Total 2012 Bond	**$482.0**	**$594.4**	
Difference	**$112.4**		

Source: Original Bond Estimate per 2012 Bond Fact Sheet. Estimated Cost at Completion from e-Builder Bond Program Budget Summary report, with report run date of June 19, 2019. Bond Premium from PPS Adopted Budget Fiscal Year 2015/2016 to Fiscal Year 2019/2020. Interest Earned from PPS Adopted Budgets Fiscal Year 2015/2016 to Fiscal Year 2018/2019. Additional funding sources from e-Builder Funding Source by Project report, with report run date of June 19, 2019.

Note: [A] The $15.5 million contribution from Concordia University for the Faubion project was an expected funding source when PPS planned the project. The $28 million presented to voters represented the Bond-paid share of the project only. [B] The Bond Program Cost Category of $84.5 million included $45 million of contingency set-aside for any unanticipated project overages in addition to program-wide costs such as master planning, swing, Ed Spec revisions, or OSM staff costs. Contingency amounts are tracked as part of project costs once allocated to a specific project. Therefore, the $42 million shown in this table represents the cost for "program-wide expenses only", the contingency portion is accounted for in the specific bond projects. [C] Estimated Cost at Completion amounts shown include escalation as actual incurred cost which was budgeted at the $84.5 million program cost level in the original bond amount.

OSM Needs to Address Project Management Issues Noted in Prior Bond Audits

While the 2012 Bond projects were delivered as promised, certain project management issues were noted in prior audits related to change order management and review of contractor costs. For instance, the 2012 Bond performance auditor found costly change orders and recommended that OSM perform audits of the Franklin and Roosevelt High Schools construction contractors' invoices to evaluate the effectiveness and efficiency of the monthly billings, among other items. As a result, PPS hired an external consultant to conduct construction cost audits on those school projects in 2017 who recommended OSM employ stronger change order management practices to improve approval processes and documentation of price negotiations. Other recommendations focused on resolving questioned and unsupported costs related to contractor and subcontractor labor charges, material costs, meal reimbursements, and other expenses.

OSM indicated they are working on addressing these recommendations including improving change control documentation, strengthening its contractor pay application processes, and updating future contract language for clarity around expenditures. Because these issues and recommendations affect project

delivery practices and cost containment for the 2017 Bond projects as well, OSM should develop a written plan, prioritize efforts and make requisite changes before projects enter the construction phase.

Recommendations

To better control project delivery, contain costs, carry-forward 2012 Bond lessons learned to the current 2017 Bond and future bond projects, and ensure bond audit recommendations are adequately addressed, OSM should work with PPS leadership and other PPS departments to:

1. Develop a written plan for establishing and prioritizing corrective actions needed to address project delivery issues related to change orders, contractor invoices, and other recommendations noted in prior audits of 2012 Bond projects. This plan, at the minimum, should identify:
    - PPS' position with regard to the recommendation (agree/disagree);
    - How PPS will implement the recommendations (as stated, implement differently, or reasons for not implementing);
    - Target implementation dates;
    - Process owners (staff responsible for addressing recommendations);
    - Actions taken to address issues and recommendations noted; and
    - Protocols for communicating status updates to the Bond Accountability Committee and/or the Board.

Section 2: Most 2017 Bond Projects are On-Schedule, but Will Cost More to Complete

While still early in the 2017 Bond cycle, OSM made progress on planning and design of the four school capital projects. Construction begins in the summer of 2019 for a new Kellogg Middle School and the modernization of Madison High School, while construction of Lincoln High School will begin in 2020 and Benson Polytechnic High School is scheduled to start in 2021. For health and safety projects identified in the bond, construction has started and projects are estimated to be completed by 2023.

More Funding is Needed to Build Schools Promised

However, as discussed in the first performance audit report issued in April 2019, the 2017 Bond funding of $790 million will not be sufficient to cover the cost of building all four schools. As of June 2019, the total cost to complete 2017 Bond projects was estimated at $1.07 billion, approximately $280 million more than funded by the voter-approved bond as shown in Exhibit 6. Unlike the 2012 Bond, there has been limited other funding sources available thus far, such as from bond premiums, to offset the additional costs.[10]

EXHIBIT 6. 2017 BOND STATUS, AS OF JUNE 19, 2019 (AMOUNTS IN MILLIONS)

Bond Component	Status	Original Bond Amount	Estimate at Completion	Dollar Change	Percent Change
Benson High School	Master Planning	$202	$330.0	$128	63.4%
Lincoln High School	Design	$187	$243.1	$56.1	30%
Madison High School	Construction	$146	$206.5	$60.5	41.4%
Kellogg Middle School	Construction	$45	$59.8	$14.8	32.9%
	Sub-Total Capital Schools Projects	$580	$839.4	$259.4	44.7%
Health & Safety Projects (A)	Phased Completion Summer 2018 – 2023	$150	$158	$8	5.3%
Program Management & Contingency	On-Going	$60 (B)	$20.6	$12.6	21%
			$52 (C)		
	Total Estimate	**$790**	**$1,070**	**$280**	**35.4%**

Source: Original Bond Cost Estimate Amounts per Board Working Session, January 24, 2017. Estimated Cost at Completion for the four school projects per e-Builder Project Management Cost Report, with report run date of June 19, 2019.

Note: (A) The 2017 Bond allocated $150 million to Health & Safety projects. An additional $8 million OSCIM (Oregon School Capital Improvement Matching Program) grant increased total H&S funding to $158 million. (B) The 2017 Bond estimated $20 million for contingency plus $40 million for program management costs for a total of $60 million. (C) The $40 million set aside for program management has increased to approximately $52 million (auditor-calculated based on e-Builder data of $1.07 billion total program estimate minus $839.4 million for capital schools, $158 million for H&S, and $20.6 million contingency).

Part of this funding gap was due to rapidly increasing construction costs in the Portland area and low initial budget projections resulting in insufficient funding to deliver the Benson High School project as envisioned

[10] According to the Fiscal Year 2019/2020 PPS Budget, $348.7 million of the $790 million Bond has been issued thus far, with bond premiums totaling $1.1 million.

in the 2017 Bond's initial master planning phase. In addition, the Board directed OSM to expand initial designs to include a Multiple Pathways to Graduation program building. To ensure the Benson High School project remains on schedule, PPS expects to commence a capital bond campaign in 2020 to support all phases of the Benson High School campus modernization in addition to continued modernization at other district schools. In the event that voters do not pass a future bond, the Board is considering other options including obtaining a full faith and credit loan secured by the PPS general operating fund to complete the construction of Benson High School.[11]

Independent from the budgets for the capital school projects, the 2017 Bond also set aside a lump sum $150 million to address health and safety needs across various district school sites. To enhance these funds, PPS secured $8 million in supplemental grant funding for security upgrades allowing improvements to be made at a greater number of school sites than anticipated in the bond. As of June 2019, approximately $32.8 million of the $150 million was spent on seismic roof upgrades, fire sprinklers and alarms, asbestos mitigation, lead-based paint, and security. Based on current schedules, significant work is scheduled to start during the summer of 2019 with all envisioned improvements completed by 2023.

Recommendations

To help fund project cost increases and enhance accountability, OSM should work with PPS leadership and other PPS departments to:

2. Develop a written plan or strategy for identifying and incorporating additional funding options if future bond funds are not available and regularly communicate and discuss progress with the Board and the Bond Accountability Committee.

[11] Board Resolution No. 5780, December 18, 2018.

Section 3: Cost Estimation Practices Improved and Financial Management was Sound, Although Small Enhancements Would Strengthen Processes

Successfully delivering a high-dollar capital bond program requires strong financial management to provide reasonably accurate cost estimates and budgets, effectively manage investments to meet cash flow needs, determine allowability of costs, and provide accurate and timely reporting to oversight bodies. Our audit found that OSM improved its cost estimation practices and exercised appropriate financial management over bond funds, although slight enhancements are needed to ensure timely financial reconciliations are performed between two critical systems.

For instance, to address challenges resulting from initial 2017 Bond estimates, OSM established a baseline cost estimation methodology that is refined using historic costs from similar projects and project elements from the 2012 bond program.[12] Additionally, OSM established several process controls to ensure cash flow needs are met and bond funds are appropriately spent. Once implemented, the new cash flow planning process should also better align cash flow needs with construction cost schedules. We also found bond investments were well-managed in accordance with PPS' cash management policy. Automated system controls help ensure that expenditures are appropriately approved and do not exceed established budgets. However, OSM fell behind on performing regular financial reconciliations between two key systems, putting the Bond program at risk of approving expenditures in excess of established project budgets and increasing the risk that bond finances reported to the Board and BAC are inaccurate.

Capital Project Cost Estimation Generally Followed an Established Methodology

Overall, we found that OSM's revised cost estimates prepared after the 2017 Bond passage addressed some of the deficiencies noted with pre-bond estimation practices, although further refinement is necessary to provide greater transparency of decisions made. As part of developing current project cost estimates for the 2017 Bond projects and address recommendations from the first 2017 Bond performance audit issued in April 2019, OSM developed and followed an established methodology combining professional estimates of hard costs with internal cost estimates for furniture, fixtures, and equipment (FF&E), soft costs, and swing spaces produced by OSM based on historic data.[13] The OSM-based cost factors and assumptions, if appropriately applied, align with industry practice. In general, total project costs were estimated using the methodology that follows.

[12] Bond Communications to the Board, Bond Accountability Committee, and Public will be assessed during the Fiscal Year 2019/2020 audit.
[13] 2017 Bond Performance Audit – Fiscal Year 2018/2019 Final Report: 2017 Bond Cost Estimate, issued April 15, 2019.

Total Project Cost = Hard Cost (from professional cost estimator)
+ Soft Cost (15% - 30% of hard cost, aggressive to conservative range)
+ Furniture, Fixtures, Equipment ($16/sf based on OSM prior costs)
+ Contingency (10% - 15%, industry range)
+ Swing/Temp Space (PPS estimated, project specific)
+ Escalation (4% - 6% based on market conditions)

Our review of revised cost estimates for the four high school and middle school capital projects developed during the second half of 2018 found that PPS followed the established methodology. In fact, the vast majority of cost components were supported by underlying documentation for all capital school projects—with only some documentation for FF&E and soft cost components for the Benson and Lincoln High School projects not available. Specifically, in documents provided to the Board in April 2018 and May 2019, OSM explained that it "budgets $16 per square foot for FF&E based on recent cost data." Yet, as shown in Exhibit 7, FF&E estimates varied from the $16 per square foot methodology and ranged from $18 per square foot for Kellogg Middle School to $41 per square foot for Benson High School. While variations from established methodology may be needed and are reasonable, there was no standardized, formal project documentation available to substantiate the departure from stated protocol.

EXHIBIT 7. 2017 UPDATED COST ESTIMATES FOR CAPITAL SCHOOL PROJECTS, AS OF 2018

Cost Component	Industry Standard or PPS Historic Data	Benson December 2018 Master Plan Report [B]	Lincoln August 2018 Updated Master Plan	Madison August 2018 Budget Approval [C]	Kellogg October 2018 Project Update [C]
Hard Cost	Professional Cost Estimator	$224.0 Million	$186.8 Million	$151.5 Million	$46.7 Million
Soft Cost	15% to 30%	$34.4 Million = 15%	$25.6 Million = 13.7%	$16.3 Million = 10.8%	$13.3 Million = 28.5%
Furniture, Fixtures, Equipment (FF&E)	Project Specific, approx. $16/sf	$15 Million = $41/sf [D]	$6 Million = $21/sf	$7.3 Million = $24/sf	$1.8 Million = $18/sf
Contingency	10% - 15%	15%	10%	14%	10%
Swing or Temporary Space	Project Specific, based on past experience	$ 5.6 Million	$2 Million	$525,000 [F]	No swing needed.
Escalation [A]	4% - 6%	6%	5%	5%	4.5%

Source: Auditor-generated based cost data and reports provided by PPS and external professional cost estimators.

Note: [A] Cost escalation was included in the hard cost estimates for each of the projects. [B] Costs for Benson High School do not include the Multiple Pathways to Graduation (MPG) building and additional swing expenses added in March 2019 at the direction of the Board. [C] Cost estimates for Madison High School and Kellogg Middle School are based on updates to the master plans presented to the Board. [D] For Benson High School FF&E, the project architect provided an initial estimate for FF&E and the project team made adjustments based on previous experience at the Grant High School project and for additional contingency needs. [E] Swing cost represents the relocation for Lincoln's athletic facilities/program which will be moved to another school site while the new building is constructed on the existing athletic field. [F] Swing costs are minimal since Madison is going to utilize the move-in ready Marshall school-site while in construction.

When asked, project teams explained that FF&E amounts were generally set based on experience with 2012 Bond projects. For the Lincoln High School project, we were informed that the Senior Project Manager updated FF&E using actual costs from the most recently completed Faubion Elementary School

construction project where he also functioned in a project manager role. However, the process or the rationale for the deviation from methodology was not documented. In contrast, for Benson High School, while there were no comparable 2012 projects to use as basis for FF&E estimates, the project team indicated that its higher FF&E estimate was needed for specialized career and technical education equipment. The Benson High School estimates for FF&E were supported by external cost estimator adjustments due to specialty heating, ventilation, air conditioning, and plumbing systems required for career and technical education shops. While the modifications to those cost estimates seemed reasonable and appropriate, there was no written documentation or other quantifiable data memorializing the variation from established methodology and calculations used. As such, auditors could not validate or confirm how the FF&E decisions for Lincoln High School were set or vetted.

Similarly, for soft costs, some deviations from the cost estimate methodology were well-documented, but not in all instances. Specifically, we noted that master plan soft cost estimates represented 10.8 percent of hard costs for the Madison High School project and 13.7 percent for the Lincoln High School project—below the 15 to 30 percent OSM standard range. In both cases, the project teams indicated that the soft cost estimates were adjusted given experience with construction on the Grant High School and Faubion Elementary School projects. While the Madison High School project teams provided documentation demonstrating the need to make adjustments from the stated OSM estimation methodology, we were not provided any similar supporting documentation for the Lincoln High School variance.

Deviations from stated practice are often warranted, but without documented explanation or rationale of how those decisions were reached, OSM cannot be assured that estimated costs were appropriate and represented a fair, good-faith evaluation of project costs. Thus, while latest iterations of bond project cost estimates were based on more robust cost factors, the critical challenge remains for OSM to ensure defined protocols are consistently followed and deviations are documented to support decisions.

OSM had Generally Effective Controls in Place over Bond Spending, Although Financial Reconciliations were not Current and Other Improvements are Needed

Overall, OSM had budget and spending process and controls in place. Once bond project budgets are approved and adopted by the Board based on project cost estimates provided by OSM project teams, amounts are entered into the e-Builder construction management system. Together with PPS' PeopleSoft financial management system, these systems provided controls over expenditures of bond funds. However, recent construction cost audits of the Roosevelt and Franklin High School projects noted issues with the level of detail and support of expenditures as discussed later in this section. [14] Moreover, we found necessary reconciliations between e-Builder and Peoplesoft were backlogged by at least one year, increasing the risk that bond expenditures are understated and would not adequately reflect remaining funds available for bond projects. Thus, several improvements are needed.

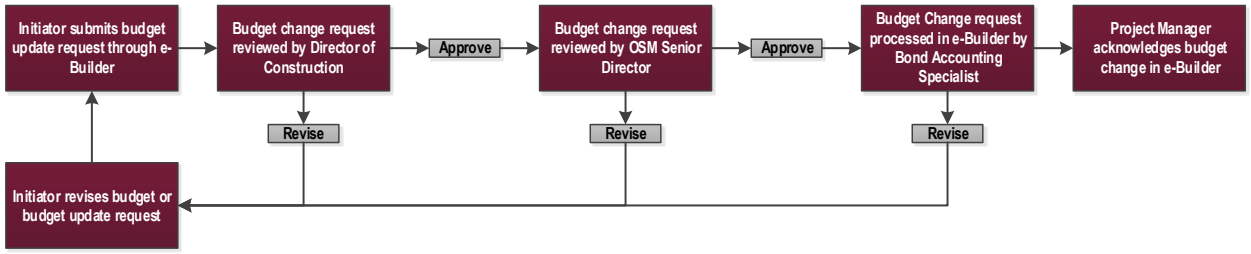
[14] Construction Contract Audit Report, Roosevelt High School, September 2017, p.2. Construction Contract Audit Report, Franklin High School, October 2017, p.2

- **Construction Management System Controls Over Budgets and Spending Reviewed Was Appropriate, but OSM Practices Need Improvement**

  The e-Builder construction management system provides control over program and project expenditures in two ways: first, the system prevents actual expenses and budget commitments from exceeding established budgets as budget changes require several levels of approval. Second, the system automates the approval process for project expenditures, routing them to the appropriate parties for approval and providing a record of when and by whom each expenditure was approved. These automated controls reduce the risk that bond funds will be spent inappropriately or in excess of approved budgets, but they can only be effective if OSM employs strong business practices over expenditure reviews outside the automated system.

  As shown in Exhibit 8, a budget change request typically begins with a member of the project team initiating the request in e-Builder. After review and approval by OSM leadership, the Senior Bond Accountant/Analyst processes the change in the system triggering a notification to acknowledge the approved budget change by the project manager.

EXHIBIT 8. BUDGET WORKFLOW IN E-BUILDER



Source: Auditor-generated from e-Builder process flowcharts and interviews with OSM staff.

Similarly, for bond expenditures, PPS accounting staff manually enter project invoices into the e-Builder system that are then available for review by the Senior Bond Accountant/Analyst and the project manager. Our review of both the automated workflow in the e-Builder system and a sample of invoices from the 2017 Bond projects found that all reviewed invoices were appropriately approved and followed PPS established e-Builder protocols. Although the expenditures we reviewed were appropriately approved and followed PPS established e-Builder protocols, the risk of expense claims being approved without appropriate underlying support still exists. Specifically, recent external construction cost audits of the Roosevelt and Franklin High school projects found instances where certain line items totaling $26 million on paid construction contractor invoices were not fully supported.[15] As of January 2019, OSM indicated it was working with the construction auditor and contractors on addressing the findings and recommendations. [16]

[15] Construction Contract Audit Report, Roosevelt High School, September 2017, p.2. Construction Contract Audit Report, Franklin High School, October 2017, p.2.

[16] OSM corrective actions and changes to its practices to address the issues identified in the construction audits will be reviewed in future bond performance audits.

- **New Bond Cash Flow Process will Better Align with Project Needs once Implemented**

  For the 2012 Bond projects, cash flows and analyses were prepared monthly by a third-party consulting firm using project schedules; yet, for the 2017 Bond, PPS moved away from using third-party cash flow projections and tasked internal staff with assuming this function. We reviewed the new PPS internal processes and found them to be reasonable and effective, if implemented, to align cash flow with project needs.

  Specifically, PPS' internal approach for determining bond cash flow needs will rely on preparing and updating project schedules and cash flow planning worksheets on a monthly basis beginning in Fiscal Year 2019/2020. Worksheets will detail expected cash flow for each capital project, health and safety improvement projects, and program and project management costs by funding source and expected year of expenditure for both the remaining 2012 Bond projects and the 2017 Bond projects. Moreover, PPS plans to detail cash flow for all bond-funded projects by fund code showing the monthly amount needed through the end of calendar year 2025—the timeframe by which all 2017 Bond projects are expected to be completed.

  By bringing the cash flow analyses in-house for the 2017 Bond, PPS anticipated that a team, led by the Senior Bond Accountant/Analyst, would prepare quarterly cash flow reports. However, due to turnover at the PPS financial leadership level as discussed in greater detail in Section 4 of this report, the Senior Bond Accountant/Analyst assumed non-bond related tasks that took priority over bond cash flowing planning. Beginning with Fiscal Year 2019/2020, PPS will implement a new cash flow update process whereby project teams will meet monthly with the OSM Director of Construction, Senior Bond Accountant/Analyst, and PPS accounting staff to discuss each project's individual cash flow needs. Similarly, at the program-level, the Senior Bond Accountant/Analyst will meet with the Treasury Manager monthly to discuss program-level cash flow requirements. With continued recent stability at PPS executive levels and new practices proposed, PPS should be better able to closely align bond cash flows with the most current cost estimates and project delivery schedules if the new practices are followed.

- **Bond Fund Investments Appeared Well-Managed**

  Overall, we found that PPS' investment activity was well-managed and appropriate for the 2017 Bond program. Specifically, to guide the investment of its bond and operating funds, the Board adopted a cash management policy that reflected requirements under Oregon Revised Statutes concerning investments of school districts.[17] The policy and related bond practices were reasonable and aligned with other public sector practices where PPS' investment of bond funds in short term, liquid investments allowed PPS to earn interest to supplement bond funds.

  The cash management policy also required quarterly reports to the Board, detailing investments by maturity date as well as the percentage of the portfolio that each investment accounted for, among other items—which aligned with other public entities' cash investment policies. Our review of the three quarterly reports available for Fiscal Year 2018/2019 found that reports submitted to the Board

[17] Oregon Revised Statutes (ORS) 294.035, 294.046.

contained nearly all elements required by the investment policy except for detailed investment transactions. These minor omissions are due to a recent change in the reporting cadence for investment performance, and both the PPS Chief Financial Officer and Treasury Manager indicated that they are in process of updating the format of the quarterly financial reports. Once updated, the reports should contain all the necessary reporting elements. Although PPS also did not report its bond investment performance relative to benchmarks as required in the investment policy, that section of the policy does not apply to the investment of bond proceeds since bond funds need to align cash inflow with project expenditures to keep projects moving, rather than maximize investment dollar returns.

- **Backlogged Reconciliations Increase Risk that Expenditures are not Within Budget**

  Certain project expenditures are processed outside the e-Builder system, including payroll, travel expenditures, and information technology purchases that are first processed in the PeopleSoft financial system and then manually entered into the e-Builder system. Since the two systems do not automatically interface with each other, the Senior Bond Accountant/Analyst performed manual reconciliations between the two systems. Given that some expenditures are first entered into the e-Builder system while others are first entered into the PeopleSoft system, reconciling the two systems is crucial for capturing an accurate reflection of project expenditures and ensuring actual costs do not exceed approved budgets.

  However, while the stated intent was to conduct monthly reconciliations, these reconciliations had not been performed since July 2018 and were not expected to be completed until the beginning of Fiscal Year 2019/2020.[18] In part, the backlog was due to the Senior Bond Accountant/Analyst assuming other tasks, some unrelated to the bond such as assisting with year-end financial activity or annual PPS budgeting processes, due to frequent turnover and vacancies at the PPS financial management leadership level. Specifically, as a result of the Chief Financial Officer position having four different individuals functioning in that role in less than two years, the Senior Bond Accountant/Analyst had to assist with preparation of the district's Comprehensive Annual Financial Report, annual budgets, and year-end closing of financial records—all non-bond related activities. As a result, the 2012 and 2017 Bond program reconciliations between the financial transactions in the e-Builder and PeopleSoft systems were not completed for several months.

  Timely reconciliations are a key control for ensuring all project expenditures are captured, do not exceed approved budgets, and are accurately reported to the Board. A year-long backlog puts the bond program at greater risk of approving expenditures in excess of established project budgets and increases the risk that reports submitted to the Board are inaccurate. These risks could increase significantly unless OSM addresses the backlog and ensures that reconciliations continue to be done in a timely manner going forward—particularly since the Kellogg Middle School and Madison High School projects are scheduled to start construction this summer where significant expenditures are generated. With a new Chief Financial Officer in place since December 2018 and the hiring of additional staff resources to manage bond financial activities in April 2019, OSM should immediately allocate and

[18] There is a time lag for some expenses such as travel, which means the reconciliation cannot be completed at the immediate conclusion of each month. Although audit fieldwork continued into May 2019, April 2019 was the last month that could have been reconciled during the audit period.

concentrate efforts on completing overdue reconciliations for Fiscal Year 2018/2019 and ensure future reconciliations are performed in a timely manner.

Recommendations

To enhance financial management over bond activities, OSM should work with PPS leadership and other PPS departments do the following:

3. Ensure cost estimates are fully documented with underlying support and rationale used for soft costs and FF&E—in addition to other cost components—including variations or deviations from stated methodology.

4. Implement the new cash flow planning process as intended at the start of Fiscal Year 2019/2020, and update cash flows regularly.

5. Immediately allocate and concentrate efforts on completing overdue Fiscal Year 2018/2019 reconciliations between the e-Builder construction management system and the PeopleSoft financial system, as well as ensure future reconciliations are regularly performed in a timely manner.

Section 4: Bond Program Delivery Framework and Document Management Practices Should be Standardized and Formally Implemented

Managing large multi-million dollar capital projects inherently comes with complex challenges and risks that are further amplified when public funds are at stake. While the successful delivery of a capital program is largely dependent on the availability of funding, an owner's experience and expertise in managing a wide portfolio of projects is equally critical. When projects are publicly funded, there is also an intrinsic obligation for greater transparency and accountability in spending tax dollars within the parameters set-forth by voter-approved measures.

When OSM's prior 2012 Bond created an instant demand for large-scale capital construction expertise within the district, the passage of the 2017 Bond amplified that need as the scale of the bond projects posed a challenge the district had not contended with for several decades. We found that OSM followed certain project planning and design activities for its 2017 Bond that aligned with best practices including using project specific management plans, incorporating value-engineering practices, vetting design decisions and selecting stakeholder buy-in. Project teams used automated project management tools, focused on transparency and accountability and made good progress on the design and construction of the 2017 Bond projects. We also found that OSM faced the following challenges:

- Key program and project management manuals and procedures were not regularly updated or were still in draft format;
- Bond records and documentation were dispersed in multiple systems, not always accessible, and hard to locate; and
- Protocols for formally documenting and communicating bond project decisions related to design changes were inconsistently applied.

Without a defined robust delivery framework in place, practices and approaches to key program and project components could vary widely as individuals rely on their personal experience and expertise handling similar project tasks and activities. This can lead to reduced consistency in how projects are delivered and increased risk of data and historical knowledge being lost—especially if there is turnover with staff or hired-consultants. More importantly, without strong practices, risks are increased for scope and quality issues such as completed deliverables differing from plans, schedule delays, or cost overruns. Given recent PPS turnover and multiple key project team members serving in a contracted capacity, it is critical that OSM capital project institutional knowledge is preserved and can be transferred to new employees or contract staff.[19]

[19] As of May 2019, the interim Senior OSM Director, Bond Program Manager, project directors for Grant High School and Benson High School, and all construction manager positions were staffed with external consultants.

Not all Delivery Guidelines and Important Project Specific Management Plans were Finalized

With the complexity of construction projects subject to a wide range of factors influencing their outcome, managing capital projects must have critical policies and procedures to guide consistent project implementation. Ideally, management plans and procedures should be formalized at the outset of a program or during early capital program planning to define and guide the work ahead.[20]

In-line with industry leading practice, OSM developed formal program and project delivery tools after the 2012 Bond passed. Serving as guiding principles to achieve the program's goals, the bond program delivery framework included a program management plan (PMP), standard operating procedures (SOPs), and a project specific project team management plan (PTMP) as shown in Exhibit 9. However, not all of these documents were updated or finalized as of May 2019.

EXHIBIT 9. BOND PROGRAM DELIVERY FRAMEWORK

Source: Auditor-generated based on review of existing data.

As discussed later in this section, the past lack of stability at the PPS executive leadership level due to turnover since the passage of the 2017 Bond has strained staff resources available to complete needed project administrative tasks such as establishing functioning bond management plans. Given the multitude of external and internal project team members to coordinate and manage, a fully developed and established program delivery framework is needed to help achieve greater uniformity and build schools as envisioned. As the project owner, OSM should place greater emphasis on completing and implementing project plans, and ensure protocols and directives are followed by all project teams.

Project Management Plan Generally Aligned with Leading Practices, but Needs to be Updated

Based on our high-level review, OSM's 2017 PMP contained elements suggested by industry leading practices as well as included discussion on governance structure, definitions for project team roles and responsibilities, description of the program and related projects, methodologies for calculating escalation,

[20] The Construction Management Association of America (CMAA), Construction Management Standards of Practice, 2015, p.10-12.

requirement for a risk management plan, establishment of key performance metrics to be captured, and monthly project report instructions. A PMP is extremely important as "one of the mainstays of program management and defines the vision, implementation strategy, schedule, and budget criteria, and the policies, procedures, and standards for the program".[21] As a "living document", a PMP must be regularly updated throughout the life of the program to account for changing conditions to ensure most contemporaneous reference and continuous guidance for project teams.

In October 2013, OSM's first PMP was completed establishing standards and protocols for managing the 2012 Bond projects and subsequent bonds. Updates to the PMP occurred annually in 2014 and 2015, with the latest PMP completed in October 2017. While the PMP evolved over time to include many key elements suggested by industry practice as discussed in prior bond performance audits, OSM was challenged keeping the PMP current through annual updates. According to interviews conducted with bond program leadership, this was in part due to a 2018-identified need for a complete restructure of the PMP to better address and communicate requirements and expected practices for project teams. As a result, the 2018 PMP update was still underway in June 2019 and not estimated for completion until late 2019.

Not all Project Specific Team Management Plans Were Completed

At the project level, best practices suggest using a project team management plan (PTMP) outlining strategies for fulfilling the requirements for specific projects to establish "the scope, budget, schedule, environmental conditions, and the basic systems to be utilized." At the "day-to-day" level, specific project standard operating procedures should "define the team responsibilities, levels of authority, communication protocol, and the systems, methods, and procedures for project execution."[22] We found that, in line with leading practice, OSM required its project managers to prepare a baseline PTMP prior to the start of project design and update the plan at key project milestone stages to address changing conditions.[23]

However, as of June 2019, a baseline PTMP had only been established for the Kellogg Middle School project, while the PTMPs for the three high school projects were still in a draft outline format only addressing high-level PTMP elements such as overall description of the project, Design Standards to be followed, and planned project milestones. With construction imminently starting at Madison High School this summer, Lincoln High School completing design, and Benson High School entering the design phase, the lack of completed baseline PTMPs increases risks of work not performed in a consistent or predictable manner. Further, the delayed timeline defeats the primary purpose of a PTMP as defined by OSM "to ensure the individual Bond projects are constructed on schedule, within budget, and with the quality standards established by the District."[24]

Moreover, the prior 2012 Bond performance audit issued in 2017 found similar issues with PTMPs for the 2012 capital school projects. The audit particularly noted that while OSM agreed that key elements of the

[21] The Construction Management Association of America (CMAA), Construction Management Standards of Practice, 2015, p.101.
[22] The Construction Management Association of America (CMAA), Construction Management Standards of Practice, 2015, p.10, 12.
[23] PPS Project Standard Operating Procedures, 2017, p.39.
[24] PPS Project Team Management Plan, 2017, p.5.

PTMP be developed prior to the start of design, only a partial draft PTMP was in place at the time the Grant High School project completed design in early 2017. [25]

Stronger Document Management is Needed

Effectively managing and controlling the flow of information related to project delivery and all project activities is critical. Inconsistent or conflicting information can lead to confusion, project delays, and uneconomical decisions. Tracking and preserving accurate project documentation allows project managers to better gauge status and progress, have the data to make informed decisions on cost and schedule, and be more accountable to stakeholders and the general public. Further, strong and reliable records protect OSM from heightened risk of claims filed by contractors, disputes over work, and cost overages.

While auditors found certain 2017 Bond project documentation expected on large scale capital projects, we also found instances of inconsistent and unorganized project documents across multiple systems used for project management in addition to system access issues. Because these practices can potentially cause project issues such as those described above, OSM needs to formally determine, record, and communicate how bond project documents will be consistently managed, stored, and protected throughout the bond program's life cycle in accordance with leading practices.

- **Formal Document Management Policies were not Always Observed by Project Teams**

  Best practices suggest that entities involved with delivering large capital programs must make early decisions on how to capture, archive, and distribute project documents.[26] While OSM's Standard Operating Procedures (SOPs) outlined protocols for maintaining and storing draft and final project documents and how documents should be labeled to ensure consistency across projects, those protocols were not consistently followed.

  Specifically, the SOP prescribes the use of the e-Builder system as the main document management system that includes a standard filing structure for all projects such as Folder A holds all administrative Folder B contains design documents, and Folder C holds permitting data. However, our review of these e-Builder folders found that their use was inconsistent—some project teams maintained certain documents as required, while other project team folders had no content.

- **Project Documents Were Maintained In Multiple Systems**

  For the most part, OSM maintained critical project documentation suggested by industry leading practices to allow managers to effectively deliver the bond projects as promised. These documents included master plan design documents, cost estimates, change order support, and schedules.

  Yet, OSM project teams used a variety of systems to manage and store project data and documents. These included e-Builder project management system, web-based work tools, and file storage systems that allowed synchronization of files. While it is not unusual to use more than one system to handle the

[25] 2012 Bond Performance Audit, June 2017, p.57.
[26] The Construction Management Association of America (CMAA), Construction Management Standards of Practice, 2015, p.103.

tremendous amount of data generated on large, complex capital projects, it is a riskier practice that can result in project managers using outdated documents and data to make critical project decisions.

While the OSM SOP designated the e-Builder system as the official system for managing project documents, project teams worked on and stored the same type of documents in different systems depending on individual preferences. For example, as shown in Exhibit 10, cost estimates were stored in four different systems depending on the project. When asked where current in-process project documents were located, project managers were generally in alignment that two main systems were used—e-Builder and the X-Drive. However, there was no consensus on where the final version of the documents should be stored.

This practice conflicts with industry leading practices suggesting that "reporting progress, schedule, cost, scope changes, and quality compliance must be achieved in a standard electronic format available to every entity engaged in the program."[27] Increased risks from not using standard locations or defined systems for maintaining project documents include project managers making decisions using outdated information, additional staff time and resources used to locate key documents, and potential repeated work if a document cannot be located and has to be recreated. Therefore, OSM should designate official systems of record, remind and train project teams to follow established protocols, as well as develop standard tools for accessing and managing documents for the bond program as a whole.

EXHIBIT 10. SYSTEMS USED TO STORE KEY PROJECT RECORDS

Document	e-Builder (A)	X-Drive (B)	Google Drive (C)	Personal Drive (D)	Blue Beam (E)	Smartsheet (F)	Other (G)
Cost Estimates	✓	✓		✓	✓		
Budgets and Expenditures	✓						
Schedules (H)	✓	✓		✓	✓	✓	✓
Project Team Meeting Minutes	✓	✓				✓	✓
Change Orders	✓	✓		✓			
Deviation Logs	✓	✓	✓			✓	
Lessons Learned	✓			✓			

Source: Auditor-generated based on survey of project team members and audit observations.

Notes: (A) e-Builder is a construction program management solution that manages capital program cost, schedule, and documents. (B) Located on the PPS network, the X-Drive is OSM's main shared drive. (C) Google drive is a cloud-based file storage system which allows users to store, synchronize, and share files. (D) Located on the PPS network, the personal drive, including email folders can only be accessed by the individual for which the drive is set-up. (E) Blue Beam is a software that allows editing of PDF documents. (F) Smartsheet is a web-based document, task, and workflow management software. (G) Other systems include informal physical files, handwritten meeting notes, or OneDrive (another cloud-based file storage and sharing platform). (H) Program and project schedules are generated by external consultants using the Primavera scheduling software that can be downloaded into PDF files which are stored in the various systems shown.

[27] The Construction Management Association of America (CMAA), Construction Management Standards of Practice, 2015, p.103.

- **Not All Key Team Members Had Access to Systems Used To Manage Projects**

  Like many public sector owners, PPS hired several experts from an external firm to provide program management and construction management services for the 2012 and 2017 Bond projects.[28] As key project team members, these external staff helped manage, plan, design, and execute projects and were involved with nearly every project activity such as budgeting, cost estimating, value engineering, invoice review, and quality control among other activities. Although the external consultants were responsible for critical project functions, they did not always have access to systems used by PPS staff to most efficiently manage projects.

  As previously shown in Exhibit 10, many key documents were stored on the PPS' internal X-Drive to which consultants functioning in project manager or construction manager roles could not always gain access since access required PPS-owned computers which was not provided. To address the issue, some OSM staff maintained data in multiple systems to provide these external consultants access to needed project documents. However, this practice increases the risk that documents are not regularly or appropriately updated on the multiple systems and project team members could inadvertently make decisions using erroneous or outdated information. Inconsistent information or multiple versions of documents make project management unnecessarily cumbersome and difficult to identify official, most recent, or final records. Thus, OSM could consider providing computers for use by external project management consultants or identify and use a standard and accessible system for storing capital project documents where the full OSM team, including hired project consultants, have access to critical project data.

- **Project Documents Were Not Always Easy to Locate**

  With the use of multiple systems, obtaining data was a challenge for auditors in addition to project management staff as users had to locate records across various systems. Moreover, some information was not clearly marked as draft or final leading to confusion with version control. When requesting information from OSM or independently searching for data in systems where we had access, records were not always easy to locate. Similar project documents were located within different system folders and files making it challenging to locate most recent versions.

  For instance, auditors and OSM staff could not easily locate basic bond financial information such as original budgets, actual expenditures, or estimated costs to complete projects within the e-Builder system, the Bond programs' key information management system. Moreover, a seemingly straight-forward inquiry of how voter-approved budgets for individual bond components track with current budgets and expenses resulted in a very time-consuming exercise for both OSM staff to produce from e-Builder as well as auditors to verify and ensure amounts were accurate and logical.

  Additionally, key project documents were scattered among a variety of systems, and several versions of documents existed making it difficult to determine which was accurate or approved. In one example, when the auditors requested the Bond Program Management Plan (PMP), OSM initially provided us with a draft version of the document and, several months later, a final version of the PMP was

[28] Heery International Inc. provides a variety of critical program and project functions for the 2012 and 2017 Bond projects.

discovered. This confusion also adds challenges for project managers, construction managers, and OSM leadership to manage costs and scope when they may not be using the most recent data available or are operating with an outdated version of a document.

Without using the defined formal system and common framework with accessible locations for project documents, there is greater project risk of inefficiencies from staff time searching for up-to-date documents, making erroneous decisions based on outdated information, potential repeated work needed if a document cannot be located, and possible inaccurate reporting to the Board and public if outdated information is used. Likewise, impediments to locating key project data and background information hinder effective and efficient management and review of projects, especially in the event of staff turnover.

Thus, as part of its current efforts to update the PMP and SOPs, OSM should develop a plan to work with project teams, ensure established document filing structures are followed, and train staff on the systems to be used. This should involve identifying critical project documentation to be maintained—such as cost estimates, schedules, project development team meetings, change orders, and deviation logs—and creating a standard numbering system to ensure consistency and availability of important project data.

Certain Design Phase Activities Aligned with Best Practices, although More Structure is Needed

With most of the 2017 school bond capital projects generally in early project delivery stages, auditors focused on processes and practices related to project planning and design where details on an individual school's renovation are conceptualized.[29] Specifically, we performed a high-level review of Education Specifications (Ed Specs) establishing building design characteristics and Design Standards detailing materials and systems to be incorporated into school buildings as these were critical tools used in project development. Because activities during the design phase refine master planning concepts into specific building details, decisions made during this critical stage greatly impact a school's desired educational programs and must be appropriately considered, vetted, and memorialized.[30]

OSM employed several best practices and spent great effort vetting design decisions and seeking buy-in on variances from Ed Specs and Design Standards, although practices related to tracking and memorializing design deviations and informing project teams on proposed changes to Ed Specs and Design Standards could be improved to ensure Bond projects are managed and delivered in a consistent manner. Additional clarification and guidance for project teams on the types of deviations to escalate to the appropriate stakeholders would also be beneficial.

[29] Kellogg Middle School is the first project to enter construction in the summer of 2019. Subsequent audits will review construction-related practices.

[30] According to the Construction Management Association of America (CMAA) Construction Management Standards of Practice, 2015, p.156, the design phase includes schematic, preliminary, and final design stages that implement local Design Standards or facility specifications into construction documents.

Ed Specs Square Footage Generally Aligned with Other School Districts Reviewed

As an important tool in building design, PPS' Ed Specs provide building design characteristics such as number and types of classroom space and square footage to support programs and curriculum.[31] When compared to other Oregon school districts, we found PPS Ed Specs were generally aligned with neighboring Beaverton and North Clackamas School Districts with programs separated into similar categories of core academics, arts, athletics, educational support, and building support. Additionally, PPS' High School Ed Specs' square footage and student capacity for these areas also generally aligned with the other districts as shown in Exhibit 11.

EXHIBIT 11. COMPARABLE DISTRICT HIGH SCHOOL ED SPECS FOR KEY AREA PROGRAM SQUARE FOOTAGE

Area Program	PPS	North Clackamas	Beaverton
Core Academics	63,660	64,720	96,750
Arts	21,150	32,255	32,640
Athletics	35,580	44,265	50,050
Education Support	67,400	55,195	52,502
Building Support	5,900	2,245	13,860
TOTAL	**193,690**	**198,680**	**245,802**
Student Capacity	1,700	1,800	2,200

Source: PPS High School Ed Specs, Beaverton High School Ed Specs, North Clackamas High School Ed Specs.

Note: Because each school district's Ed Specs are organized differently with similar program areas captured in different categories, auditors adjusted certain line items within program areas between the districts allowing for a more illustrative comparison.

Although the five main program categories are the same between the various school Ed Specs, individual items within each category can vary based on the unique needs of the particular district. For example, PPS invested heavily in makerspace areas with Ed Specs recommending 1,200 square feet, whereas North Clackamas School District preferred makerspace areas of only 650 square feet.[32] By contrast, Beaverton School District preferred extra square footage and space for electives such as business and marketing, computer applications, and journalism and web design.

Project Teams Routinely Sought Design Input from a Diverse Set of Stakeholders

Throughout the lifecycle of a school capital improvement project, OSM appropriately engaged a diverse set of stakeholders to garner feedback on specific design elements and assist in developing schools reflecting the needs of students, teachers, parents, and community members.[33] Specifically, for each of the four schools included in the 2017 Bond, OSM developed and followed a Stakeholder Engagement Plan to help OSM get input and school facilities meet the needs of people who will occupy, use, and maintain the buildings. For example, during planning for the Madison High School modernization process, OSM held

[31] PPS had separate Ed Specs for high schools, middle schools, and elementary schools.

[32] Makerspace allows students to experiment, discover, model, construct, and design with the support of tools and technology not found in typical classrooms.

[33] Stakeholders include internal PPS leadership, Design Advisory Groups, Steering Committee, and Student Support Services to name a few.

42 stakeholder and design review meetings between December 2017 and June 2018, each focused on a single program area such as performing arts, special education, or custodial services.

Additionally, during the design phase of each project, OSM project teams met with a Design Advisory Group (DAG) comprised of PPS and school staff, students, parents, and community members to ensure a diverse set of input was represented for building design.[34] For instance, the DAG for the Lincoln High School project met eight times between February 1, 2018 and March 14, 2019 with meeting minutes posted on the PPS website. In addition to meeting with the DAG, OSM project teams held design workshops and open houses to obtain public input and facilitated discussion of specific issues or considerations.

Design Standards and Ed Specs Deviations were Tracked, although Enhancements Could be Made

While PPS followed best practices and utilized Ed Specs and Design Standards, each school project is unique and designs may vary or deviate from those requirements for site-specific reasons. To track these deviations, each OSM project team maintained a customized deviation log with varying fields of information. This practice could be enhanced by using a standardized approach for the type of data captured in the logs.

For instance, while each capital school project deviation log generally contained information on Ed Specs or Design Standards section impacted, description of the proposed deviation, and comments on the deviation, certain fields were not uniformly captured across the logs included savings estimates and project stage when the deviation was submitted for review. Further, while the log entries were generally supported, it was not always apparent whether the deviations were actually approved or not as these fields were not consistently completed on the logs. This missing information could be particularly challenging if there is project team turnover where new project managers would not know status of a proposed deviation and desired changes could more easily be missed during construction. Thus, OSM could enhance its practice ensuring standard information is included on all logs and approvals are documented and tracked.

Proposed Changes to Ed Specs and Design Standards May Not Always Be Accessible to Project Teams

PPS modernizes its district schools following guidelines prescribed in district Ed Specs and Design Standards. Both are 'living' documents that were regularly updated based on 2012 Bond project experience, district priorities, and best practices—as aligned with other educational entities.[35]

In between official updates to Design Standards and Ed Specs, proposed changes that need to be made were tracked by the Facilities and Asset Management department and maintained in individual staff email folders or physical paper copies that were not always accessible to project teams. No formalized tracking list or central shared location was available to OSM project teams to consider the proposed design standard changes. Given that Ed Specs were last updated in 2017 and updates on approved Design Standards may occur infrequently, project teams that are currently designing Bond projects may be unaware of potential changes to these guiding documents given the location where the data is stored which could lead to same change requests being submitted by multiple project teams. Establishing a tracking

[34] DAG charter suggests stakeholders include teachers, students, parents, middle school cluster parents, neighborhood associations, business associations, cultural associations, potential program and/or capital partners, alumni, the school principal, and school board representatives.
[35] Consistent with other educational facilities such as California Department of Education Facilities Planning Division AAV Educational Specifications Chapter 3 that states "district goals should be reexamined and updated before a new educational specifications document is developed."

mechanism for proposed changes that is available to all project teams, or would ensure a greater awareness of proposed changes to Ed Specs and Design Standards and eliminate redundant efforts to make the same changes.

Value Engineering was Well Employed, but Further Clarification is Needed for Vetting Decisions

Another type of activity during design, known as value engineering, is specifically directed at analyzing building features, systems, equipment, and material selections to optimize quality, performance, value, and cost-containment.[36] At OSM, these value engineering activities were completed during design and before the start of construction in alignment with best practices. For the 2017 Bond, OSM employed a beneficial value engineering process; yet, the process needs clarification and consistency for documenting deviations and ensuring project teams understand the type of project decisions to bring forward for input of leadership.

For each of the 2017 Bond projects, OSM assembled a Steering Committee to provide input to project teams on various design decisions that typically included the OSM Senior Director, PPS Chief of Staff, PPS Chief Academic Officer, and the Deputy Superintendent, among others. According to project teams, the committee's purpose is to provide guidance for issues that may not rise to the level of needing input from the Superintendent or Board. While the OSM Senior Director issued a memo in September 2018 explaining the decision-making hierarchy to the Bond Accountability Committee as shown in Exhibit 12, the type of information or decisions that should be elevated to the Steering Committee was not described. Informally, project teams told us they take decisions impacting programs, operations, or maintenance to the Steering Committee, while decisions with significant impacts on programs, project costs, or project delivery were directed to the Board.

EXHIBIT 12. DECISION MAKING HIERARCHY

Source: Memorandum from OSM Senior Director to Bond Accountability Committee, September 25, 2018.

[36]The Construction Management Association of America (CMAA), Construction Management Standards of Practice, 2015, p.30 states that value engineering is used for the purpose of optimizing value in project designs. It is best completed during the initial preliminary design stage.

Absent clear direction on what decisions should be elevated beyond the project team, there is a risk that decisions related to Ed Spec, Design Standards, or value engineering deviation decisions made by the project teams may not be fully vetted with buy-in to ensure end-user impacts are considered.

Good Practices Captured in Lessons Learned Can be Further Enhanced

With the passage of the first bond program in 2012, OSM project teams set out to capture lessons learned for each of its capital projects in its efforts on continuous improvement. The resulting lessons learned documents and lists within the e-Builder system are important tools to carry-forward efficient and effective practices, while eliminating or mitigating risks of repeating past issues on the future 2017 Bond projects. However, there are opportunities to enhance the tracking and sharing of these lessons between project teams.

Some lessons learned logs were captured and maintained in the e-Builder system—although there were some limitations with data tracked. Specifically, lessons learned were tracked in the system by individual project with a quick description of the lesson learned and the date it was input into the system. With some of these logs comprised of hundreds of lines of lessons learned, this tracking could be enhanced by classifying each lesson learned into standard categories to allow other project team members to more easily find and understand lessons that might be needed on their projects.

For instance, categorizing the lessons learned into fields related to project phase—such as design, construction, or closeout—or project area such as structural, electrical, or concrete, would make it easier for project teams to find and incorporate the lessons into future projects. Further, since not all OSM staff can view projects within the e-Builder system unless they were assigned access to a particular project containing the lessons learned logs, risks are increased that a project team could be unaware of past project issues and would repeat the past mistakes. Adding standard categories in the e-Builder system would allow OSM to summarize lessons learned and regularly distribute or discuss with team members across projects.

Additionally, lessons learned were also tracked in documents maintained on project team members' individual computers or in physical binders. Similar to the issues identified with logs in the e-Builder system, maintaining individual logs not accessible to other project teams or not categorized for ease of use adds risk to project delivery processes

Turnover May have Hindered OSM's Ability to Develop Consistent Bond Management Framework

Research suggests that high turnover among leadership in public agencies can have several consequences including reductions in workforce resources available to complete key agency tasks as well as the loss of human capital, agency expertise, and institutional memory necessary for successfully

implementing programs. Moreover, such turnover can negatively impact an agency's ability to fulfill long-term commitments, including municipal bond programs and commitments made to voters.[37]

While employee turnover cannot be completely avoided, we found frequent changes in PPS leadership and promotions or transfers to other departments created OSM workload problems with existing staff assuming additional roles and taking on more responsibilities. An even greater challenge with recurring turnover stems from institutional knowledge being lost and direction at the leadership level frequently changing causing potential shifts in priorities and focus—impacting not only educational matters, but also goals for large capital programs dependent on stable direction for building facilities to meet current and future student needs. Turnover, combined with still in-progress updates to formal program management policies and practices as discussed throughout this section, increases the risk of Bond projects not being efficiently and consistently managed or delivered.

Significant Executive Leadership Turnover Impacted Ability to set a Consistent Tone and Overall Approach to Bond Program Management

While turnover rates rose since 2011, there was substantial turnover at the executive leadership and senior management levels during the 2017 Bond development and subsequent implementation period. Specifically, between February 2017 and December 2018, there were several PPS executive positions that turned over 2.5 times, on average, over an approximate two-year period, as shown in Exhibit 13.

EXHIBIT 13. PPS EXECUTIVE LEADERSHIP TURNOVER SINCE FEBRUARY 2017

Leadership Position	Current Individual in Place Since	Times Turned Over since February 2017
Superintendent	October 2017	3x
Deputy Chief Executive Officer (A)	July 2018	1x
Chief Operating Officer	January 2019	2x
Chief Financial Officer (B)	December 2018	4x
Chief Technology Officer	January 2019	4x
Chief Human Resources Officer	August 2018	2x

Source: Turnover data provided by PPS Human Resources.

Note: (A) The Deputy Chief Executive Officer position was eliminated and replaced with a Deputy of Finance and Operations. (B) Two of the four turnovers were PPS-hired contractors who served as interim Chief Financial Officer.

With nearly the entire executive management level rotating multiple times within several months, senior OSM staff and contracted consultants managed the bond program without the benefit of continuous, consistent support by PPS executive leadership. In past large-scale capital program performance audits we have conducted, we found that stable, long-tenured executive leadership supporting bond activities and staff responsible for delivery of successful bond programs provided the best chance for positive outcomes. Although there were recent hires and promotions to these key leadership positions within PPS, it is too early to fully assess the impact of those changes. However, based on discussions with project teams, there seemed to be a shared positive outlook for future stability and direction.

[37] "Turnover at the Top: Causes and Consequences of Leadership Change in Public Agencies", James C. Clinger, Department of Political Science and Sociology, Murray State University, Kentucky, USA. January 2016.

Similarly, there were critical leadership turnover within OSM that included the elimination of the OSM Chief position, the creation of a new position for a Director of Construction, and turnover at the Senior Director and Program Manager level. With all these changes, none of the key OSM personnel present at the time the bond passed in May 2017 were in their same position as of May 2019, thus further straining efforts to provide more stability and consistency in how projects are managed and delivered. Further, the Roosevelt High School project experienced approximately 10 individuals in the role of project manager or construction manager since June 2013 increasing the risk of missing or unclear project communications and confusion about whether key design details were reviewed, approved, or implemented.

Without stable staffing on projects and formalized project management protocols to oversee and manage project activity, critical project details can be missed and project inefficiencies can translate into cost overages.

Recommendations

To refine and better standardize the bond program delivery framework and document management practices, OSM should work with PPS leadership and other PPS departments to:

6. Update and re-issue the PMP, in addition to individual school PTMPs, as well as consider developing quick tools, guides, and checklists to help project teams implement the protocols identified in the PMP and PTMPs.

7. Formally communicate, clarify, and train OSM project teams and individuals involved with project delivery on existing document management protocols including requirements and expectations for usage by considering the following:
    - Identifying the documents each project should maintain during each phase of project development;
    - Determining a standard location and specific systems to be used for in-progress and final versions of capital project documents where key project team members of the OSM team, as well as non-PPS employees, have access;
    - Establishing a new or refining the existing standard hierarchy across projects detailing the specific folders to be used as well as expected contents of each folder; and
    - Developing a uniform naming and numbering convention for each document across all capital projects.

8. Standardize design deviation logs by identifying consistent information to be maintained for each project and ensure approvals are documented.

9. Establish a tracking mechanism to store proposed changes to Ed Specs and Design Standards in an accessible location.

10. Supplement the “Decision-Making Hierarchy” process with written guidance on what decisions to bring forward and elevate beyond the project team as well as train project teams on standard practice for value engineering deviations—as well as Ed Spec and Design Standards deviations.

11. Better document lessons learned by:

    - Categorizing lessons learned log items into separate subcategory sections allowing project managers to more easily identify relevant items; and
    - Summarizing lessons learned and regularly distribute or discuss items with project teams.

Appendix A: Auditee Response

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Date: **September 19, 2019**

To: Cathy Brady, Principal
Sjoberg, Evashenk Consulting

From: Marina Cresswell, Senior Director
Office of School Modernization

Subject: Performance Audit – Fiscal year 2018/2019
Phase 2 Report
Staff Response

Portland Public Schools (PPS) and the Office of School Modernization (OSM) have received and reviewed Sjoberg, Evashenk Consulting (SEC) 2018/2019 June 2019 Draft Audit Report titled "Performance Audit – Fiscal Year 2018/2019, Phase 2 Report: 2017 Bond Program" (the Draft Report).

PPS appreciates the time and effort SEC has put into the Phase 2 completion of this fiscal year's audit. Given that the audit occurred during a lengthy transition of OSM program management staffing, the Draft Report provides a timely focus on policies, procedures and training related to program management. As noted throughout the Draft Report, OSM has generally effective processes and controls in place, that align with best practices. The Draft Report provides thoughtful and well-considered recommendations that will refine and standardize these processes. In recognition of the value of SEC's observations, OSM has already begun the process of implementing several of these recommendations.

Based on our review of the Draft Report, PPS has prepared responses to each of your 11 recommendations. Each response contains one of the following statements:

- Concur – Goal is to implement the recommendation by June 30, 2020
- Concur with Comment – Goal is to implement the recommendation by June 30, 2020 with qualifying comments
- Nonconcur – Recommendation may not be implemented with comments to explain
- Completed – Recommendation has been implemented

The following table presents a tabulated summary of PPS's responses.

#	Abbreviated Recommendation	Dept	Response
1	Develop a written plan for establishing and prioritizing corrective actions needed to address project delivery issues related to change orders, contractor invoices, and other recommendations noted in prior audits of 2012 Bond projects.	OSM	Concur
2	Develop a written plan or strategy for identifying and incorporating additional funding options if future bond funds are not available and regularly communicate and discuss progress with the Board and Bond Accountability Committee.	Ops/BOE	Completed
3	Ensure cost estimates are fully documented with underlying support and rationale used for soft costs and FF&E – in addition to other cost components – including variations or deviations from stated methodology.	OSM	Concur
4	Implement the new cash flow planning process as intended at the start of Fiscal Year 2019-2020, and update cash flows regularly.	OSM	Concur with Comment
5	Immediately allocate and concentrate efforts on completing overdue Fiscal Year 2018-2019 reconciliations between the e-Builder construction management system and the PeopleSoft financial system, as well as ensure future reconciliations are regularly performed in a timely manner.	OSM	Concur
6	Update and re-issue the PMP, in addition to individual school PTMPs, as well as consider developing quick tools, guides, and checklists to help project teams implement the protocols identified in the PMP and PTMPs.	OSM	Concur
7	Formally communicate, clarify, and train OSM project teams and individuals involved with project delivery on existing document management protocols including requirements and expectations for usage.	OSM	Concur

8	Standardize design deviation logs by identifying consistent information to be maintained for each project and ensure approvals are documented.	OSM	Concur with Comment
9	Establish a tracking mechanism to store proposed changes to Ed Specs and Design Standards in an accessible location.	FAM	Concur with Comment
10	Supplement the "Decision-Making Hierarchy" process with written guidance on what decisions to bring forward and elevate beyond the project team as well as train project teams on standard practice for value engineering deviations—as well as Ed Spec and Design Standards deviations.	OSM	Concur with Comment
11	Better document lessons learned by: categorizing lessons learned log items into separate subcategory section allowing project managers to more easily identify relevant items; and summarizing lessons learned and regularly distribute or discuss items with project teams.	OSM	Concur

Attached is our specific response to each of your recommendations. Please contact me if you have any questions or comments. Thank you again for your hard work and efforts to identify areas for improvement.

Recommendation 1 (p. 13)

Develop a written plan for establishing and prioritizing corrective actions needed to address project delivery issues related to change orders, contractor invoices, and other recommendations noted in prior audits of 2012 Bond projects. This plan, at the minimum, should identify:

- PPS's position with regard to the recommendation (agree/disagree);
- How PPS will implement the recommendations (as stated, implement differently, or reasons for not implementing);
- Target implementation dates;
- Process owners (staff responsible for addressing recommendations);
- Actions taken to address issues and recommendations noted; and
- Protocols for communicating status updates to the Bond Accountability and/or the Board.

Staff Response: **Concur**

Recommendation 2 (p. 15)

Develop a written plan or strategy for identifying and incorporating additional funding options if future bond funds are not available and regularly communicate and discuss progress with the Board and Bond Accountability Committee.

Staff Response: **Completed**

Board Resolution 5780, Authorizing Benson Campus Master Plan as Part of the 2017 Capital Bond Program, lays out the strategy for completing the Benson project through a future capital bond campaign in 2020 or, failing a referral or pass in 2020, use of a Full Faith and Credit Bond.

Recommendation 3 (p. 22)

Ensure cost estimates are fully documented with underlying support and rationale used for soft costs and FF&E – in addition to other cost components – including variations or deviations from stated methodology.

Staff Response: **Concur**

PPS prioritizes a transparent and replicable estimating methodology. As noted in the Draft Report, the "vast majority of cost components were supported by underlying documentation for all capital school projects." OSM will revise its Standard Operating Procedure on cost estimating to specifically require written documentation supporting cost estimates, in addition to continuing to direct project management staff in best practices.

Recommendation 4 (p. 22)

Implement the new cash flow planning process as intended at the start of Fiscal Year 2019-2020, and update cash flows regularly.

Staff Response: **Concur with Comment**

OSM has completed implementation of a standardized, monthly, project cash flow planning process for the large capital projects using e-Builder. Implementation is in progress with Health and Safety projects. Due to the minimal changes that occur in a month's span, program management cash flow planning has historically been performed on a quarterly basis, and will remain on that timeline.

Recommendation 5 (p. 22)

Immediately allocate and concentrate efforts on completing overdue Fiscal Year 2018-2019 reconciliations between the e-Builder construction management system and the PeopleSoft financial system, as well as ensure future reconciliations are regularly performed in a timely manner.

Staff Response: **Concur**

OSM has completed the hiring of an additional financial analyst. Reconciliations for Fiscal Year 2018-2019 are now complete through April 2019, and focused efforts to bring reconciliations up to date are ongoing. OSM has implemented a change in e-Builder that will allow future reconciliations to proceed more quickly, and continues to look at options to create automated integration between PeopleSoft and e-Builder.

Recommendation 6 (p. 35)

Update and re-issue the PMP, in addition to individual school PTMPs, as well as consider developing quick tools, guides, and checklists to help project teams implement the protocols identified in the PMP and PTMPs.

Staff Response: **Concur**

Recommendation 7 (p. 35)

Formally communicate, clarify, and train OSM project teams and individuals involved with project delivery on existing document management protocols including requirements and expectations for usage by considering the following:

- Identifying the documents each project should maintain during each phase of project development;
- Determining a standard location and specific systems to be used for in-progress and final versions of capital project documents where key project team members of the OSM team, including non-PPS employees, have access;
- Establishing a new or refining the existing standard hierarchy across projects detailing the specific folders to be used as well as expected contents of each folder; and
- Developing a uniform naming and numbering convention for each document across all capital projects.

Staff Response: **Concur**

Recommendation 8 (p. 35)

Standardize design deviation logs by identifying consistent information to be maintained for each project and ensure approvals are documented.

Staff Response: **Concur with Comment**

OSM concurs with this recommendation and intends to standardize design deviation logs in future projects. As noted in the Draft Report, each capital project team is already utilizing design deviation logs. OSM will look to update those logs with additional information where possible.

Recommendation 9 (p. 35)

Establish a tracking mechanism to store proposed changes to Ed Specs and Design Standards in an accessible location.

Staff Response: **Concur with Comment**

OSM agrees that being able to access information on proposed changes to Education Specifications (Ed Specs) and Design Standards would provide greater awareness to those potential changes. As a point of note, capital projects only incorporate Ed Specs and Design Standards that have been approved as of the 100% Design Development milestone of the project. Proposed changes are not incorporated until they have been approved.

Recommendation 10 (p. 36)

Supplement the "Decision-Making Hierarchy" process with written guidance on what decisions to bring forward and elevate beyond the project team as well as train project teams on standard practice for value engineering deviations—as well as Ed Spec and Design Standards deviations.

Staff Response: **Concur with Comment**

OSM concurs with this recommendation and will provide written general guidance to project teams on the types of decisions that should be elevated for leadership input. As per standard practice, OSM management will continue to provide regular, detailed oversight of projects through coordinated monthly review of Project Status Updates via e-Builder and monthly team meetings. As part of that oversight, OSM management will continue to assist teams in determining which decisions need to be elevated for higher-level input.

Recommendation 11 (p. 36)

Better document lessons learned by: categorizing lessons learned log items into separate subcategory section allowing project managers to more easily identify relevant items; and summarizing lessons learned and regularly distribute or discuss items with project teams.

Staff Response: **Concur**

OSM concurs with this recommendation. OSM also utilizes bi-monthly project team meetings for regular discussion of lessons learned. Historically, lessons learned have also been incorporated into the Program Management Plan (PMP) and Standard Operating Procedures (SOPs). With changes in progress to the structure of the PMP and SOPs, OSM will look to create a stand-alone lessons learned document as part of the above recommendation.

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