SC&H GROUP

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Frederick County Public Schools
Capital Projects and School Construction Performance Audit

September 20, 2023

Report #22-06

POWERFUL MINDS | PASSIONATE TEAMS | PROVEN RESULTS

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I. Executive Summary

SC&H Attest Services, P.C., a wholly owned affiliate of SC&H Group, Inc. (SC&H) was engaged by Frederick County Government (FCG, the County) Interagency Internal Audit Authority (IIAA) to conduct a performance audit of Frederick County Public Schools (FCPS) Capital Program Departments major school construction projects. The audit was performed in two phases: a planning and risk assessment phase and a testing phase.

Under FCPS' Division of Operations, the Capital Program Department prepares long-range enrollment projections for FCPS and individual schools, as well as annually updating its 10-year Educational Facilities Master Plan (EFMP). The EFMP contains recommendations for various projects, including construction of new schools, school additions, and capital renovation projects.

The following provides a summary of the audit's objectives, procedures, and results. Additional details surrounding the audit can be found in the report's body and appendices.

SC&H thanks the Division of Operations, specifically the Capital Program Department, Fiscal Services Division, specifically Financial Reporting and Purchasing and its personnel, whose assistance, and availability were vital during the audit process.

Audit Objectives

Each objective references the associated construction delivery method evaluated: Construction Manager Agency (CMa) or Construction Manager at Risk (CMaR).

Two schools were included in the audit, each representing a different construction method: Blue Heron Elementary School (CMa) and Brunswick Elementary School (CMaR).

1. Evaluate actual costs incurred vs. budgeted costs for major school construction projects throughout the following workflow for completeness and accuracy to determine whether procedures are implemented and operating as intended.
    a. Planning to preliminary budget. (CMaR & CMa).
    b. Approved budget to contract development between FCPS, construction managers, and vendors. (CMaR & CMa).
    c. Contract post-award to close out. (CMa).
    d. Managing/monitoring projects and change orders. (CMaR & CMa)
2. Evaluate major school construction projects for adherence to compliance with requirements and regulations to determine whether both procedures are implemented and are working properly. (CMaR & CMa).
3. Compare construction costs per square foot to relatable projects with other entities to understand similarities and differences. (CMa).
4. Evaluate commission and workgroup released recommendations to determine if they have been incorporated into construction projects since their release. (CMaR & CMa).

Performance Audit Process

SC&H conducted the audit with the following two-phased approach.

1. Phase 1, Planning Survey and Risk Assessment: Understand processes, evaluate risks/controls, and develop audit program.
2. Phase 2, Testing: Conduct evaluation procedures to achieve internal audit objectives and conclude internal audit and report results.

Summary Results

Based on the audit procedures performed, no significant control or process deficiencies were identified and the FCPS Division of Operations, Capital Program Department appears to operate under a controlled environment with effective oversight related to major school construction.

As a result, no reportable observations were identified. However, four improvement opportunities are presented for FCPS's consideration related to:

1. Integrating emerging technology to automate business processes.
2. Periodically reviewing and updating industry standard forms and incorporating changes in applicable regulations into the business processes.
3. Ensuring that the onsite construction completion review is formally and consistently documented for all construction projects.
4. Implementing process to conduct an annual school construction cost benchmark analysis.

These opportunities resulted from information learned throughout the audit procedures. The goals of them are to provide suggestions for further operational improvements and risk mitigation activities. FCPS has proactively responded by acknowledging the recommendations and sharing their plan to address each.

II. Performance Audit Summary

Background

SC&H Attest Services, P.C., a wholly owned affiliate of SC&H Group, Inc. (SC&H) was engaged by Frederick County Government (FCG, the County) Interagency Internal Audit Authority (IIAA) to conduct a performance audit of Frederick County Public Schools (FCPS) Capital Program Department's major school construction projects. The audit was performed in two phases: a planning and risk assessment phase and a testing phase.

Under FCPS's Division of Operations, the Capital Program Department prepares long-range enrollment projections for FCPS and individual schools, as well as annually updating its 10-year Educational Facilities Master Plan (EFMP). The EFMP contains recommendations for various projects, including:

- Construction of new schools;
- School additions; and
- Capital renovation projects.

The Capital Program Department is also responsible for managing the architectural and engineering design of new schools, major building additions, and systemic renovation projects; managing construction and project inspection services associated with capital projects.

Furthermore, the Capital Program Department prepares the 6-year Capital Improvement Program (CIP); which involves:

- Conducting feasibility studies for major building renovation projects; as well as school redistricting studies;
- Coordinating land acquisition for future school sites including state processing and local reviews/approvals;
- Preparing educational specifications for new school projects;
- Manage the Geographic Information Systems (GIS) program;
- Reviewing residential development plans as required by county and municipal jurisdictions including adequate public facilities ordinance school reviews for Frederick County and municipalities when required; and
- Maintaining state and local inventory of facilities and review state and local proposals for changes in laws or regulations related to public school design and construction.[1]

In Frederick County, Maryland, there are currently 68 schools: 38 elementary schools (PreK-5), 13 middle schools, and 12 high schools (one of them being a virtual school with no physical building). There are also 4 charter school buildings that are not operated by FCPS and 5 specialized program schools that are FCPS owned and operated facilities. According to the September 30th, 2023 enrollment projections, elementary and high school enrollment are projected to increase by 1.8% and 2.3%, respectively. These projections are essential for the Capital Program Department to effectively plan for future school construction and renovation projects, ensuring that there are adequate facilities to accommodate the growing student population.[2] Refer to the following table for the 2023 FCPS enrollment projections.

[1] "Capital Program." Frederick County Public Schools, https://www.fcps.org/capital-program.

[2] Frederick County Public Schools, Frederick, MD, 2023, pp. 1–2, ENROLLMENT PROJECTIONS. https://www.fcps.org/capital-program/reports-and-publications

Grade Level	30-Sep2022 Actual	30-Sep2023 Projection	Change	Percent Change
Elementary School (PreK-5)	21,635	22,024	389	1.8% Increase
Middle School (6-8)	10,580	10,542	-38	0.4% Decrease
High School (9-12)	14,568	14,903	335	2.3% Increase

Table 1: FCPS September 30th, 2023, Enrollment Prediction

The following provides additional information related to FCPS's schools and major projects as presented in the 2023 FCPS EFMP.

1. **Appendix A, FCPS Facilities Inventory:** The table provides data for FCPS schools including addition and renovation history.
   Source: EMFP (Appendix M: FCPS Facilities Inventory IAC/PSCP 101.1)
2. **Appendix B, FCPS Major Projects Timeline and Impacts on Capacity:** The table provides major project timelines for FCPS school.
   Source: EMFP (Chapter 7: Recommended 10-Year Capital Improvement Plan)

For additional information, refer to the EMFP in its entirety at https://www.fcps.org/capital-program/efmp.[3]

Process Summarization and References

The overall school construction process is complex in nature and includes many steps, requirements, people, documentation, approvals, etc. to help ensure it operates efficiently and in a controlled manner. The following provides a summary of the operation. To offer additional information into its complexity, **Appendix C: Process-level Flowcharts** includes process-level flowchart diagrams that present details related to pre-construction, construction management, and close out.

Capital Projects

FCPS utilizes project selection criteria to identify and prioritize major capital projects, which may include pursuing new capacity, modernization, limited renovation, or emergency systemic projects based on identified needs.

New Capacity Projects

The purpose of a new capacity project is to reduce overcrowding of students in a particular area. To perform this, new buildings are constructed on future school sites, a replacement building is constructed on the same site, or there is a construction of an addition to an existing school.

Modernization Projects

The goal of a modernization project is to design, construct, and equip aging schools to meet the current educational standards along with the FCPS, County, State, and Federal codes and requirements. This process can include redesigning of existing spaces or additions to meet the educational program requirements. Prior to a modernization project being conducted, a feasibility study is performed to determine if the building should be renovated or replaced. Modernization projects are considered for buildings that are 60 years old or older.

Limited Renovations Projects

If a building needs five or more major building systems replaced, but not a complete modernization, the project will fall under a limited renovation. These projects are a mid-life update to school buildings and

[3] Frederick County has 67 schools, which is stated in the EMFP. However, one school (New Midway/Woodsboro), a single elementary school, and operates out of two separate buildings. This accounts for the total of 68 FCPS schools as stated above.

apply to buildings around 30 years old with high Facility Condition Index (FCI) scores. A FCI is the ratio of deferred maintenance cost to the current replacement value.

Systemic Projects

Systemic projects apply to systems or equipment that are at risk of failure in buildings outside the age-windows for modernization or limited renovations projects. This can include emergency replacement needs and responses to the State/Federal mandates.

Capital Project Processes

During the audit, three primary process levels related to FCPS' major capital projects were evaluated, as presented below.

Pre-construction

In June 2022, FCPS staff presented the Superintendent's draft recommended EFMP to the Frederick County Public Schools Board of Education (Board).[4] The EFMP is utilized as a blueprint to ensure the County's schools meet the highest standards for excellence. The EFMP document is kept current and is updated annually with a focus toward outlining the conditions of the County's school buildings.

The EFMP is first submitted to the Board for approval. Following approval, the EFMP is presented to the Maryland Department of Planning for review and the final EFMP version is submitted to the Interagency Commission on School Construction (IAC). Once the review and approval processes are completed, FCPS can begin budgeting for upcoming projects and submit their budget to the IAC and the Board for approval.

Once the budget is approved, FCPS begins their procurement process and reviews their prequalified list of vendors to send bids out to. The pre-construction stage of a major capital project typically involves multiple key processes, including:

1. Planning: The planning stage involves the annual update of the EFMP, which is reviewed and approved before budget considerations. The EFMP serves as a guide for determining which buildings are in need of renovation or new construction.
2. Budgeting: The Supervisor of Facilities Planning drafts the County and State budget worksheet based on the EFMP. Buildings that are older than 35 years old are identified, and decisions are made for renovation or new construction. FCPS aims to renovate a school facility after 30 to 35 years and replace it after 60 years.
3. Prequalification Requirements and Procurement: Capital Program utilizes three construction delivery methods: Construction Manager Agency (CMa), Construction Manager at Risk (CMaR), and Design-Build. This performance audit focused on the CMa and CMaR construction delivery methods which are discussed below.

FCPS has been using the CMa method for the past 15 years to help mitigate some of the risks associated with the traditional design-bid-build method. The CMa model is similar to the traditional design-bid-build method, as the work is completed by low bid prime contractors after the design is completed.

In contrast, the CMaR method is a relatively newer project delivery method used by FCPS. The CMaR is hired early in the project, separately from the design consultant. As the drawings are developed by the project design team through the various stages of design (Schematic, Design Development, Permit, and Construction), the CMaR is responsible for reviewing the documents at each stage and developing plans

[4] Frederick County Public Schools, Frederick, MD, June 2022, pp. 1–204, Board of Education Approved Educational Facilities Master Plan. https://www.fcps.org/capital-program/efmp

for site logistics, constructability, and project schedule. Once the design documents are completed, the CMaR is responsible for bidding and providing the owner with a Guaranteed Maximum Price (GMP). Once a GMP is established and agreed upon between the owner and the CMaR, the CMaR is responsible for completing the construction of the project for the agreed-upon GMP amount. FCPS began transitioning to the CMaR method for a variety of reasons, including risk reduction. For instance, the change order process (or need to increase project function) for CMaR places more risk on the contracted party through the establishment of a GMP during the procurement/contracting process. This is discussed in more detail in the "Construction Management" section below.

Construction Management

The construction management stage typically begins after FCPS receives funding for a project, and the contract is approved. During the construction management stage, the construction manager and Capital Program Department closely monitor the progress of current projects and prepare monthly and quarterly project status reports to ensure that they stay within budget. This occurs for both CMa and CMaR methods.

If a project is managed using the CMa model and there are any required change orders, a procedure is in place for the approval of the change order by the Project Manager (PM) or Senior Project Manager (Sr. PM), Director of Capital Programs, and Chief Operating Officer (COO). Additionally, any change orders that exceed $200,000 require approval from the Superintendent and the Frederick County Board of Education before the change order request can be processed.

If a project is managed using CMaR, a GMP is established before the project is initiated. Once a GMP is established and agreed upon between the owner and the Construction Manager at Risk (General Contractor), the Construction Manager at Risk is responsible for completing the construction of the project for the agreed-upon GMP amount. Change order requests from the prime contractors are reviewed and approved by the Construction Manager at Risk. Although it is not required per each contract, FCPS also reviews and approves change orders under CMaR. This practice is noted as a favorable internal control. Change order review by FCPS is not required since the GMP is pre-approved by the Frederick County Board of Education before CMaR construction begins. Unless the scope of the project is changed by the owner, the Construction Manager at Risk is not entitled to any change orders on the project.

Project Closeout Procedures

The Frederick County Public Schools Operations Division Procedure NO. 34 outlines the procedures for final payment and closeout of Construction Management Department major construction projects. The document establishes steps for the appropriate Sr. PM or PM to establish a closeout file for each project. Final payment of the contract will be approved upon the receipt of all applicable documents listed in the procedural document. The project closeout procedures ensure that all necessary documentation is obtained and verified before final payment is made.

Objectives

During the testing phase, SC&H developed audit objectives and identified the steps necessary to evaluate the effectiveness and efficiency of the construction process and associated costs involved in building and renovating school facilities. The following objectives for the testing phase were developed based upon the understanding gained during the planning phase and approved by the IIAA. Each objective references the associated construction delivery method evaluated. For instance, all objectives related to CMa were tested for the completed school construction sample project Blue Heron Elementary School. However, certain objectives related to CMaR were deemed out of scope for the ongoing sampled school construction project Brunswick Elementary School. At FCPS, the CMaR delivery

model was first implemented for the construction of Brunswick Elementary School. As noted below, the applicability of objectives varied based on the ongoing or completed status of the sampled school construction projects.

A. Evaluate actual costs incurred vs. budgeted costs for major school construction projects throughout the following workflow for completeness and accuracy to determine whether procedures are implemented and operating as intended.
    a. Planning to preliminary budget. (CMaR & CMa)
    b. Approved budget to contract development between FCPS, construction managers, and vendors. (CMaR & CMa)
    c. Contract post-award to close out. (CMa)
    d. Managing/monitoring projects and change orders. (CMaR & CMa)
B. Evaluate major school construction projects for adherence to compliance with requirements and regulations to determine whether both procedures are implemented and are working properly. (CMaR & CMa)
C. Compare construction costs per square foot to relatable projects with other entities to understand similarities and differences. (CMa)
D. Evaluate commission and workgroup released recommendations to determine if they have been incorporated into construction projects since their release. (CMaR & CMa)

Scope

The audit was initiated in July 2022 and completed in May 2023. The period in scope for the performance of these procedures included the completed school construction project of Blue Heron Elementary School (FY2020 through FY2021) and Brunswick Elementary School (FY2022 through FY2024).

Methodology and Approach

SC&H 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.

In order to obtain the necessary documentation to appropriately perform and conclude upon the objectives of this audit, SC&H conducted the following procedures.

Creation of Audit Plan
SC&H created a detailed audit plan describing each of the procedures to be executed to effectively address the objectives detailed above. The audit plan was reviewed and approved by the Director-Internal Audit Division prior to implementation. The approved plan was then used as a guide throughout the review process to ensure that the goals of each objective were thoughtfully addressed, with the results to provide value-added and actionable information for the County and FCPS.

Execution of Audit Program
SC&H executed the audit plan by completing the following tasks.

Objective A
Evaluate actual costs incurred vs. budgeted costs for major school construction projects traveling through the following workflow for completeness and accuracy. Ensure procedures are implemented and are operating as intended.

Summary Procedures	Summary Results
A.1 - Selected a sample of Construction Manager Agency (CMa) and Construction Manager at Risk (CMaR) delivery model-built school construction and assessed if: 1. Project costs were within budget and the project was completed on time. 2. The Supervisor of Facility Planning addressed all the issues in the issue letter.	Based on the procedures performed: 1. Project costs appeared to be within budget and the project was completed on time. * 2. Issue letter notes were addressed by the Supervisor of Facility Planning. **Brunswick Elementary School was reported to be 60% completed at the time of the report. However, based on discussion with FCPS, both the remaining budget and time appeared reasonable to complete the project.* Refer to the following table for budget vs. cost comparisons.

Sampled school	Budgeted Amount	Current/ Pending Amount	Surplus / Deficit	Estimated Completion Time	Project Completion Time
Blue Heron ES (CMa)	$43,726,924	$39,239,433*	*($4,487,491)*	August 2021	August 2021
Brunswick ES (CMaR)	$48,341,848	$47,014,540***	$0**	August 2023	August 2023***

**Current expensed amount (including pending payment) as of 11/30/2022, a surplus of $4,487,491 was noted. Please note that there are still unpaid charges being processed.*
***Project is still in progress.*
****Construction for Brunswick ES began April 1, 2022. At the time of the project status report in July 2023, the project was 95% complete, with the occupancy goal being August 2023.*

Summary Procedures	Summary Results
A.2 - Selected a sample of CMa and CMaR delivery model-built school construction projects and assessed if: 1. The draft coversheet had appropriate approvals and was uploaded to BoardDocs. 2. The architect and designer were selected in accordance with PUR-SOP-030 Architect & Engineer Selection. 3. The Director of Maryland Department of Education (MDSE) comments were acknowledged.	Based on the procedures performed: 1. The draft coversheet was approved by appropriate personal and properly documented. 2. The architect and designer were selected based on their technical, interview and fee proposal scores in accordance with PUR-SOP-030 Architect & Engineer Selection procedure. 3. MDSE comments were addressed by the review letter response.

Summary Procedures	Summary Results
A.3 - Selected a sample of CMa and CMaR delivery model-built school construction projects and assessed if: 1. FCPS and Code of Maryland Regulations (COMAR) policies and procedures were being followed during the procurement stage of construction. Specifically, components of the following were reviewed: a. FCPS - Reg.200-07 Purchasing Regulations b. COMAR - MD. Code, Regs.14.39.03.07 - Competitive Sealed Bidding-One Step Sealed Bidding 2. Whether each project's Request for Proposal (RFP) and any addendums were listed on the eMaryland Marketplace Advantage (eMMA)/FCPS website.	Based on the procedures performed: 1. It appeared the reviewed components of both the FCPS and COMAR procurement policies were adhered to. 2. The RFP and addendums to the RFP were available to bidders and posted on eMMA/FCPS website.

Summary Procedures	Summary Results
A.4 - Selected a sample of CMa and CMaR delivery model-built school construction projects. Further, obtained a population of change orders, selected a sample, and assessed if: 1. The change order was approved by the appropriate approvers and appeared to be in accordance with the construction contract. 2. The change order was documented in the FCPS internal server. 3. The total change order agreed with related individual change order documentation.	Based on the test procedures performed: 1. Change orders were reviewed and approved by all appropriate approvers. 2. Change orders appeared to be appropriately documented. 3. Change order logs tied to the approved change order log for individual contractors. Refer to the following table for the budget vs. actual vs. change order total.

Sampled school	Budgeted Amount	Change Order Total	Actual/Current Amount	Over / Under Budget
Blue Heron (CMa)	$43,726,924	$812,215	$39,239,433	Under
Brunswick (CMaR)**	$48,341,848	$529,133*	$47,014,540*	N/A**

**Project is still in progress.*

***School was built using a CMaR delivery model and Guaranteed Maximum Price (GMP) was established. The amount identified is not a change order. It is documented to track changes against the contingency in the GMP.*

Summary Procedures	Summary Results
A.5 - Selected a sample of CMa delivery model-built school construction projects and assessed if: 1. Monthly and quarterly reports had appropriate approvals. 2. The school project closeout file followed FCPS' closeout procedure document.	Based on the procedures performed: 1. Monthly and quarterly reports were reviewed and approved by appropriate approvers. 2. The construction appeared to be closed out according to the FCPS Closeout of Construction Management procedures.

Summary Procedures	Summary Results
A.6 - Selected a sample of CMa and CMaR delivery model-built school construction projects. Further, obtained a population of invoices, selected a sample, and assessed: 1. If each invoice had the required approvals. 2. The reasonableness of the invoice. 3. The actual costs incurred for the sample compared to actual costs incurred for other projects of the same size and stature. 4. The percentage complete the project was at the time of the invoice.	Based on the procedures performed: 1. Invoices were approved by appropriate approvers. 2. Invoiced charges appeared reasonable after examining both the actual hard costs and the soft costs associated with the project. This included a detailed review of the costs incurred and an assessment of whether they align with industry standards and the project budget. 3. Project costs for FCPS school construction appeared reasonable compared to regional school district school construction average cost per square foot. Refer to **Objective C** below for additional details.

Objective B

Evaluate major school construction projects for adherence to compliance with requirements and regulations to determine whether both procedures are implemented and are working properly.

Summary Procedures	Summary Results
B.1 - Selected a sample of CMa and CMaR delivery model-built school construction projects and assessed adherence with post-procurement requirements and regulations. Specifically, components of the following requirements and regulations were reviewed: 1. Reg 200-06 Change Orders to Construction Projects 2. Reg 200-08 MBE Procedures 3. Reg. 200-07 Purchasing Regulations 4. SOP #DEPT-IOP-001 Architect and Engineer Selection 5. PUR-SOP-019 MBE Goal 6. 302.4 Submission Cost Estimate Summary 7. 303.4 State Submission Owner Contract Agreement 8. 306.2 Request for Reimbursement to LEA	Based on the procedures performed: 1. The reviewed components of both the FCPS and COMAR procurement policies were adhered to.

Objective C

Compare construction costs per square foot to relatable projects with other entities to understand similarities and differences.

Summary Procedures	Summary Results
C.1 - Selected a sample of CMa delivery model-built school construction projects and performed a data analytical comparison of FCPS school construction costs per square foot to similar projects in other regional school districts.	Based on the analytical procedures performed: 1. The analysis indicates that the school construction costs per square foot are reasonable when compared to other school districts of similar size and with recent construction dates in Maryland and Virginia. Refer to the analysis below for additional details.

Objective C: Data Analysis

As part of audit **Objective C**, SC&H conducted a comparison of FCPS school construction costs per square foot to similar projects in other regional school districts. SC&H selected a sample of completed school construction projects for Frederick, Howard, and Loudon County public schools and performed data analytics to verify the FCPS major school construction costs are reasonable compared to regional public-school constructions. To perform the analysis the following steps were followed:

1. Obtained quarterly and monthly reports for the sample of completed FCPS school construction.
2. Identified the budgeted amount, gross square footage of the building, and actual cost incurred to calculate the cost per gross square foot.
3. Conducted similar data analytics on six other elementary schools built in other school districts with similar gross square footage during a similar time period.
4. Compared the cost per gross square foot between the other school districts and FCPS for major school construction projects.
5. Inquired with FCPS and other school districts to determine any discrepancies that exist between FCPS and other similar school districts.

Procedures

The following procedures were performed to calculate the cost per square footage for sampled FCPS school construction.

1. Obtained the project and budget status report which included the total gross square footage and total cost incurred.
2. Analyzed the cost per gross square foot for Waverley Elementary School, Blue Heron Elementary School, and Oakdale Middle School.
3. Calculated the cost per gross square feet (gsf) by taking the total project cost and dividing it by the gsf based on the analysis, the average cost per gross square foot for FCPS school construction was $404.

Frederick County, MD	1st Year Project Rec'd Funding	Size	Current Total Cost Expensed	Cost per sq. ft./GSF
Waverley ES: Replacement Design	FY19	130,225 gsf	$51,551,748	$395
Blue Heron ES: New	FY19	95,085 gsf	$39,239,433*	$412
Total		**225,310 gsf**	**$90,791,181**	**$807**
Average		**112,655 gsf**	**$45,395,591**	**$404**

Table 2: FCPS school construction cost per square footage

**Current expensed amount (including pending payment) as of 7/31/2023. Please note that there are still unpaid charges being processed.*

The following procedures were performed to calculate the average cost per square foot for a sample of two Howard County School (HCPS) constructions.

1. Calculated the cost per gsf by taking the total project cost and dividing it by the gsf.
2. Based on the analysis, the average cost per gross square foot for HCPS school construction was $432.

Howard County, MD	Scheduled Construction Completion Date	Size	Total Cost	Cost Per Sq. ft/GSF
Talbot Springs Elementary School	December 2022	88,229 gsf	$43,467,173	$493
Hanover Hills Elementary School	May 2018	116,633 gsf	$43,359,553	$372*
Total		**204,862 gsf**	**$86,826,726**	**$865**
Average		**102,431 gsf**	**$43,413,363**	**$432**

Table 3: HCPS school construction cost per square footage

**Refer to the below commentary regarding inflation as a variable to consider. If an estimated 3% inflation per year was applied, the revised cost per square foot would be approximately $419.*

After analyzing the average cost per square foot for the two school districts, we found a difference of $28 per gsf.

County Public Schools	Difference = FCPS – Howard Co. Average Cost per Sq Ft/GSF
Frederick County Public Schools	$404
Howard County Public Schools	$432
Difference	**($28)**

Table 4: FCPS vs HCPS school construction cost per square footage analysis

Further, The following procedures were performed to calculate the average cost per gross square foot for a sample of four Loudoun County School constructions.

1. Calculated the cost per gsf by taking the total project cost and dividing it by the gsf.
2. Based on the analysis, the average cost per gross square foot for LCPS school construction was $361.

Loudoun County, VA	Scheduled Construction Completion Date	Size	Total cost	Cost Per sq. ft./GSF
Waxpool Elementary School	Summer 2019	102,852 gsf	$39,810,000	$387
Goshen Post Elementary School	Fall 2018	105,757 gsf	$28,310,000	$268
Hovatter Elementary School	Fall 2021	110,400 gsf	$44,235,000	$401
Elaine E. Thompson Elementary School	Fall 2022	113,600 gsf	$44,235,000	$389
Total		**432,609 gsf**	**$156,590,000**	**$1,445**
Average		**108,152 gsf**	**$39,147,500**	**$361**

Table 5: LCPS school construction cost per square footage

After analyzing the average cost per square foot for the two school districts, we found a difference of $43 per gsf.

County Public Schools	Difference = FCPS - Loudon Co. Average Cost per Sq Ft/GSF
Frederick County Public Schools	$404
Loudon County Public Schools	$361
Difference	**$43**

Table 6: FCPS vs LCPS school construction cost per square footage analysis

Summary Results

SC&H consulted with an Estimating Manager at a national construction company regarding the analysis and the following was noted.

1. FCPS vs. HCPS: There may be underlying factors driving the cost disparity, such as differences in construction materials (specialized building), labor costs, or location. Further investigation would be required to identify specific factors and their impact on the cost of building schools in the two districts.
2. FCPS vs. LCPS: The difference in cost per square foot between the construction of the two schools to be less than 5% and does not appear to be a significant difference by looking at the average square footage of the two school districts analyzed. Further, in general, school construction in Loudoun County tends to be more expensive than in Frederick County. However, as the size of a school construction project increases, the price per square foot tends to decrease since the project management fees stay consistent.

Variables

Based on research, variables were identified that could impact the cost of school construction resulting in variations depending on several factors such as construction completion date, inflation, location, school size, materials used, labor costs, and other specific requirements. Comparing the cost of school construction across different locations or types of schools can be difficult due to these variations. Research data is summarized below.

1. Per the National Clearinghouse for Educational Facilities (NCEF) in 2014, it was found that the average cost of building a new school in the United States was about $232 per square foot. However, this number can vary depending on location, with some areas experiencing much higher or lower construction costs.[5] With this report taking place in 2014, utilizing an inflation rate of 3% per year, the average cost would be approximately $294 per square foot in 2022.
2. A report by the 21st Century School Fund revealed that the cost of building a new school in Washington D.C. was much higher than the national average, at around $475 per square foot. This is due to a combination of factors such as high land costs, expensive labor, and the need for specialized design features to meet the unique needs of the district. In contrast, rural areas may experience lower construction costs due to lower land and labor costs. However, these areas may also face challenges related to transportation and logistics, which can increase construction costs in some cases. It's also worth noting that the cost of renovating an existing school can be significantly lower than building a new school from scratch. This is because some of the infrastructure and materials are already in place, which can help to reduce costs.[6]

[5] “Unified Facilities Criteria (UFC) .” EDU, Jan. 2014, https://www.wbdg.org/FFC/DODUnifiedFacilitiesCriteriaUFC/2014EDU.pdf.

[6] State of Our Schools: America's K-12 Facilities 2016. https://eric.ed.gov/?id=ED581630

Objective D

Evaluate commission and workgroup released recommendations to determine if they have been incorporated into construction projects since their release.

Summary Procedures	Summary Results
D.1 - Obtained and reviewed prior audit recommendations and verified the audit recommendations and workgroup findings had been addressed. Specifically, the following was evaluated: 1. Phase 1 prior audit recommendations to ensure that recommendations 3 – 10 have been addressed from the 2011 Frederick County Interagency Internal Authority - FCPS Construction Management Phase I report. 2. Areas of focus identified in the 2017 Frederick County School Construction Work Group (SCWG)- Reducing School Construction Costs While Preserving Excellence in Education report to ensure the area of focus were addressed.	Based on the procedures performed: 1. FCPS appeared to adequately address the prior audit recommendations 3 – 10 identified by the County Interagency Internal Authority. 2. FCPS appeared to adequately address the focus areas identified by the work group, including Construction Technology, Delivery System, and Local, State, and Federal Mandates. * ** Specific legislative actions to help reduce school construction costs need to be fully addressed, for example, efforts around prevailing wage rates.* *Additional details surrounding the Work Group area of focus can be found under* ***Appendix D: School Construction Work Group Focus Area Response.***

Summary of Work

Based on the audit procedures performed, no significant control or process deficiencies were identified and the FCPS Capital Program Department, Division of Operations appears to operate under a controlled environment with effective oversight related to major school construction. While no reportable observations are included as a result of this audit, four improvement opportunities are presented for FCPS's consideration. These opportunities resulted from information learned throughout the audit and through test and analytical procedures. The goals of them are to provide suggestions for further operational improvements and risk mitigation activities. As these are improvement opportunities and not official observations, FCPS is not required to provide an action plan to address them. However, FCPS has proactively responded by acknowledging the recommendations and sharing their plan to address each.

We appreciate the assistance and cooperation of the management and staff of the Capital Program Department who assisted in the performance of this audit. Please contact us if you have any questions or comments regarding any of the information contained in the performance audit report.

SC&H Attest Services, P.C.

SC&H Attest Services, P.C.
Sparks, Maryland
September 20, 2023

III. Improvement Opportunities

Improvement Opportunity 1

Integrate emerging technology to automate business processes.

Detail

During testing, we identified certain manual procedures in place for processing business activities, which involved reviewing and approving deliverables. These deliverables are maintained in both, digital and physical formats. Examples include the review and approval process for the following:

1. Facilities planning document
2. Change orders
3. Budgeting worksheet
4. Invoices

No exceptions were identified when evaluating operational effectiveness. However, based on the significance of operations and magnitude of spend, replacing manual procedures with automated delivery management solutions may help reduce risks, maintain consistency, and streamline those operations.

Risk

Manual, repetitive processes could be susceptible to human error, which can lead to inaccuracies, inconsistencies, and inefficiencies. Further, in extreme situations, manual processes could be susceptible to fraud, waste, and/or abuse, as they may lack the necessary checks and balances to prevent or detect related risks.

Recommendation

The Capital Program Department should consider reviewing the audit's accompanying process-level flowchart diagrams (**Appendix C: Process-level Flowcharts**) and identifying processes that can be automated (e.g., incorporated into an existing or future tool, module, application, etc.).

For instance:

1. There may be opportunity for the change order review and approval process to be automated by pushing the change orders to the various required review and approval stages with digital signatures. This could provide advantages, including increased efficiency, improved accuracy, cost savings, and faster turnaround times.
2. Utilizing a delivery management system can streamline the process of drafting, reviewing, and approving during the preparation of facilities planning documents and budget worksheets.

FCPS Response

FCPS will continue to evaluate the pros and cons of utilizing a centralized project delivery management system. FCPS acknowledges that automation platforms offer extensive capabilities, enabling them to effectively handle all aspects of a project, starting from the planning phase and extending to its completion and closeout. However, it is important to note that Initial procurement, and ongoing licensing requirements for these platforms require significant investments of operating funds.

Improvement Opportunity 2

Periodically review and update industry standard forms and incorporate changes in applicable regulations into the business processes.

Detail

The American Institute of Architects (AIA) is a professional organization that represents architects and architecture firms in the United States. AIA offers a wide range of templates and forms that are used in the architecture and construction industry as a standard.

FCPS applies standards and reference material (i.e., forms) provided by AIA for industry standardization and clarity and completeness. These help FCPS conduct its operations based on industry best practices and in a consistent manner. Audit procedures evaluated content within these forms from a control attribute standpoint. However, procedures did not include determining if all forms were based on the most current versions available. During independent research activities of publicly available AIA material, certain information used by FCPS appeared to be outdated. For example:

1. The use of AIA Document 701/CMa – 1992 instead of the 2017 version
    a. The 2017 version has four key changes:
        i. Language: More concise and clearer language
        ii. Formatting: Additional space for information and signatures
        iii. Information: Additional language for submitting change orders and making payments for work performed
        iv. Inclusion of digital data: Optional specification for digital transformation

No exceptions were identified throughout the audit procedures related to specific control attributes within these forms and their related processes. Further, we noted that all the internal procedural documents reviewed during the assessment were generally current (e.g., within the past several years).

Risk

Use of outdated standards and best practices could lead to operations being conducted that do not align with safe and effective protocol and procedures.

Recommendation

The Capital Program Department should establish a procedure to periodically review and revise official forms sourced from AIA, as well as any updates to regulations from Code of Maryland Regulation - COMAR, and other requirements mandated by regulatory bodies. This procedure can be incorporated into an annual policy and procedure review and update process.

FCPS Response

FCPS will consider including language in future CM Agency Contracts to require using 2017 or most current version of G701/CMa form for change orders.

Improvement Opportunity 3

Ensure that the onsite construction completion review is formally and consistently documented for all construction projects.

Detail

Periodic onsite reviews are conducted during a school's construction to monitor progress and help ensure completion of different stages of the project. These reviews should be formally documented using a standardized template and supported by digital images as support evidence.

During our walkthrough discussions, documentation support for onsite construction reviews were in place, however they were inconsistent across projects in formatting and content. For example, we found that manual notetaking is the primary method of documentation during onsite construction reviews, as confirmed during our inquiries.

Risk

The risk of inconsistent documentation of construction completion can lead to incomplete or inconsistent information about the project status and quality, making it challenging to track and monitor the progress of the construction project accurately.

Recommendation

The periodic onsite construction completion review should be formally documented in a consistent manner for all projects. To achieve this, a standardized template should be designed and implemented, along with the inclusion of digital images to capture progress and identify any issues at the construction site.

This approach could help present a consistently clear and concise record of the construction progress, facilitate the timely identification and resolution of any issues that may arise, and ultimately help to ensure that the project is completed within budget and on schedule.

FCPS Response

FCPS will consider designing a standard template as suggested in this report to formally and consistently document onsite construction reviews.

Improvement Opportunity 4

Implement a formal process to conduct an annual school construction cost benchmark analysis.

Detail

FCPS does not currently conduct a periodic benchmarking exercise to compare/assess other related regional school construction projects to understand measurable criteria (e.g., costs) so it can determine if its own costs are comparable and reasonable.

However, based on benchmarking audit procedures conducted, FCPS did appear aligned with the sampled projects. Refer to **Objective C: Data Analysis** for details.

Risk

Inconsistent procedures to evaluate and scrutinize costs, and to understand comparable costs, could result in missed opportunities to drive down those costs during the procurement process and throughout construction.

Recommendation

The Capital Program Department should consider conducting a periodic (e.g., annual) analysis of the school construction costs in the region in order to ensure that the school construction cost of FCPS is reasonable.

FCPS Response

FCPS will consider conducting formal annual analysis of school construction costs in the region as suggested in this report to ensure transparency, cost-effectiveness, and informed decision-making in its school construction projects. Further, it is important to note that current market conditions are reviewed for Construction Management at Risk projects.

V. Appendix A: FCPS Facilities Inventory

M

APPENDIX M: FCPS FACILITIES INVENTORY IAC/PSCP 101.1

Source: Frederick County Public Schools, May 2023

May 2023

SCHOOL NAME & ADDRESS	GRADES	SRC	PRIOR FALL EQ. ENROL. 2022	Percent Utilized	ACREAGE	BUILDING DATA Date SQ. FT. A=Added R=Renovated	Does not include demolitions	Facility Condition Index (FCI) Score	COMMENTS GENERAL	Portable Classrooms 22-23
Ballenger Creek Elem 5250 Kingsbrook Drive Frederick, MD 21703	PreK-5	636	653	103%	19.29	1991(Orig)	64,187	62.00%	PFA*	None
Ballenger Creek Middle 5525 Ballenger Creek Pike Frederick, MD 21703	6-8	859	787	92%	25	1990(Orig)	113,850	56.10%	PFA*	None
Blue Heron Elem 7100 Eaglehead Drive New Market, MD 21774	PreK-5	677	680	100%	15	2021 (Orig)	95,085	0.37%	PFA*	None
Brunswick Elem 400 Central Avenue Brunswick, MD 21716	PreK-5 SpEdPreK	507	712	140%	34.1	Total 1952(Orig) 1959 A 1978 A 1980R	60,205 30,880 9,212 20,113 40,042	68.00%	PFA*	10
Brunswick High 101 Cummings Drive Brunswick, MD 21716	9-12	928	829	89%	48	Total 1965(Orig) 1979 A 1983 A 1983 R 1993 A	166,066 139,890 1,296 4,740 2,000 20,140	59.70%	PFA*	None
Brunswick Middle 301 Cummings Drive Brunswick, MD 21716	6-8	957	643	67%	29.7	Total 1985(Orig) 2006A 2006R	119,539 79,743 39,796 22,170	44.46%	PFA*	None
Butterfly Ridge Elementary 601 Contender Way Frederick, MD 21703	PreK-5 SpEdPreK	762	568	75%	12.12	2018 (Orig)	105,515	8.94%		None
Career & Technology 7922 Opossumtown Pike Frederick, MD 21702	10-12	292	N/A	N/A	15.52	Total 1977(Orig) 1986 A	86,681 58,719 27,962	55.39%	PFA*	3
Carroll Manor Elem. 5624 Adamstown Road Adamstown, MD 21710	PreK-5 SpEdPreK	573	521	91%	18.9	Total 1965(Orig) 1992 A 2010 A 2010 R	77,593 33,847 21,000 22,746 5,334	56.37%	PFA*	None
Catoctin High School 14745 Sabillasville Rd. Thurmont, MD 21788	9-12	1,046	765	73%	88	Total 1969(Orig) 1994 A 2000 A 2000 R	179,045 125,246 2,170 51,629 51,485	47.46%	PFA*	None

PFA * Priority Funding Area

Date Printed 5/30/2023

May 2023

SCHOOL NAME & ADDRESS	GRADES	SRC	PRIOR FALL EQ. ENROL. 2022	Percent Utilized	ACREAGE	BUILDING DATA Date SQ. FT. A=Added R=Renovated	Does not include demolitions	Facility Condition Index (FCI) Score	COMMENTS GENERAL	Portable Classrooms 22-23
Centerville Elem. 3601 Carriage Hill Drive Frederick, MD 21704	K-5	627	439	70%	16	2005(Orig)	87,175	40.44%	PFA*	4
Crestwood Middle 7100 Foxcroft Drive Frederick, Maryland 21703	6-8	882	729	83%	23.08	2004(Orig)	107,212	38.66%	PFA*	None
Deer Crossing Elementary 10601 Finn Drive New Market, MD 21774	PreK-5	568	504	89%	22	1997(Orig)	77,966	Poor	PFA*	6
Earth & Space Sciences Laboratory 210 Madison Street Frederick, MD 21701	Special Elem Sci Programs	N/A	N/A	N/A	2	2009 (Orig) 2012 (A)	10,624 10,771	32.22%	PFA*	None
Emmitsburg Elementary 300 South Seton Avenue Emmitsburg, MD 21727	PreK-5	225	216	96%	13.35	1974(Orig)	45,080	59.42%	PFA*	2
Frederick High 650 Carroll Parkway Frederick, MD 21701	9-12	1,601	1,791	112%	28	Total 2017 (Replacement)	270,618 270,618	11.69%	PFA*	None
Glade Elementary 9525 Glade Road Walkersville, MD 21793	PreK-5 SpEdPreK	582	547	94%	13.35	1995(Orig)	66,500	56.73%	PFA*	None
Governor Thomas Johnson High 1501 North Market Street Frederick, Maryland 21701	9-12	2,171	1,911	88%	39.31	Total 1966(Orig) 2000 A 2000R	312,533 303,302 9,231 303,000	44.21%	PFA*	None
Governor Thomas Johnson Middle 1799 Schifferstadt Drive Frederick, MD 21701	6-8	838	538	64%	25.31	2000(Orig)	126,700	46.69%	PFA*	None
Green Valley Elementary 11501 Fingerboard Road Monrovia, MD 21770	K-5	501	786	157%	31.22	1971(Orig)	51,888	56.78%		12
Heather Ridge School 1445 Taney Avenue Frederick, MD 21702	6-12	148	47	32%	10	Total 1988(Orig) 2011 A 2011 R	31,553 30,000 1,553 1,369	51.75%	PFA*	5
Hillcrest Elementary 1285 Hillcrest Drive Frederick, MD 21702	PreK-5	534	572	107%	12.7	Total 1988(Orig) 1990 A	62,305 55,970 6,335	56.02%	PFA*	14

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Kemptown Elementary 3456 Kemptown Church Rd. Monrovia, MD 21770	K-5	388	400	103%	39.46	1981(Orig)	53,800	59.45%		None
Lewistown Elementary 11119 Hessong Bridge Rd. Thurmont, MD 21788	SpEdPreK-5	209	155	74%	13	Total 1961(Orig) 1967 A	50,898 31,928 18,970	41.17%		3
Liberty Elementary 11820 Liberty Road Frederick, MD 21701	PreK-5	271	237	87%	11.64	Total 1927 (Orig) 1950 A 1967 A 1982 A 1982 R	40,720 14,182 18,768 7,520 14,432 18,000	65.62%	PFA*	1
Lincoln A Building 250 Madison Street Frederick, MD 21701	Success Program Special Ed	N/A	52	N/A	3.153	1974(Orig)	20,334	53.28%	PFA*	None
Lincoln Elementary 200 Madison Street Frederick, MD 21701	PreK-5 SpEdPreK	643	601	93%	11	Total 2012 (Replacement) 2012 R	98,463 87,423 11,040	24.21%	PFA*	None
Linganore High School 12013 Old Annapolis Rd. Frederick, MD 21701	9-12	1,642	1,554	95%	50	Total 2010 (Replacement)	253,565 253,565	28.58%		None
Middletown Elementary 201 East Green Street Middletown, MD 21769	3-5	480	440	92%	8	1974(Orig)	54,854	53.10%	PFA*	None
Middletown High 200 Schoolhouse Drive Middletown, MD 21769	9-12	1,328	1,081	81%	39	Total 1974(Orig) 1998 A 1997 R (Sci) 1998 R	189,641 158,850 30,791 12,327 8,645	60.42%	PFA*	3
Middletown Middle 100 Martha Mason Street Middletown, MD 21769	6-8	1,052	788	75%	24	Total 1953(Orig) 1957 A 1976 A 1995 A	114,974 53,668 17,100 9,006 35,200	55.48%	PFA*	None
Middletown Primary 403 Franklin Street Middletown, MD 21769	PreK-2 SpEdPreK	432	465	108%	20.026	2006 (Orig)	70,288	40.49%	PFA*	4
Monocacy Elementary 7421 Hayward Road Frederick, MD 21702	PreK-5	550	561	102%	12.55	1989 (Orig)	57,900	51.08%	PFA*	12

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SCHOOL NAME & ADDRESS	GRADES	SRC	PRIOR FALL EQ. ENROL 2022	Percent Utilized	ACREAGE	BUILDING DATA Date SQ. FT. A=Added R=Renovated	Does not include demolitions	Facility Condition Index (FCI) Score	COMMENTS GENERAL	Portable Classrooms 22-23
Monocacy Middle 8009 O'possumtown Pike Frederick, MD 21702	6-8	914	903	99%	20.38	1981(Orig)	114,445	67.70%	PFA*	6
Myersville Elementary 429 Main Street Myersville, MD 21773	K-5	434	406	94%	12	Total 1971(Orig) 1993 A	54,889 39,497 15,392	62.37%	PFA*	None
New Market Elementary 93 W. Main Street New Market, MD 21774	PreK-5	627	581	93%	12.3	Total 1933 (Orig) 1962 A 1977 A 1979 R 1979 A 2008 A 2008 R	88,983 9,212 29,800 25,860 30,895 930 23,181 13,160	58.21%	PFA*	3
New Market Middle 125 West Main Street New Market, MD 21774	6-8	774	681	88%	19.9	1974 (Orig)	114,936	57.69%	PFA*	None
New Midway Elem. 12226 Woodsboro Pike Keymar, MD 21757	3-5	148	137	93%	6.6	Total 1930 (Orig) 1963 A 1983 A 1983 R	21,894 9,520 9,906 2,468 8,914	51.56%	PFA*	3
North Frederick Elem. 1010 Fairview Avenue Frederick, MD 21701	PreK-5 SpEdPreK	755	604	80%	15.01	Total 2014 (Replacement)	95,613 95,613	21.03%	PFA*	None
Oakdale Elem. 5830 Oakdale School Road Ijamsville, MD 21754	K-5	707	1,019	144%	13.931	Total 2001 (Orig) 2012 A 2012 R	89,566 71,706 17,860 2,111	44.51%	PFA*	12
Oakdale High 5850 Eaglehead Drive Ijamsville, MD 21754	9-12	1,512	1,597	106%	49.1	2008 (Orig)	241,061	39.35%	PFA*	None
Oakdale Middle 5810 Oakdale School Road Ijamsville, MD 21754	6-8	1,158	1,049	91%	22.3	Total 2002 (Orig) 2021 A	129,858 109,089 20,769	46.91%	PFA*	None
Orchard Grove Elem. 5898 Hanover Drive Frederick, MD 21701	PreK-5 SpEdPreK	562	590	105%	15.68	1996 (Orig)	70,142	58.23%	PFA*	6

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Parkway Elementary 300 Carroll Parkway Frederick, MD 21701	PreK-5	236	257	109%	5	Total 1930 (Orig) 1961 A 1982 A 1982 R	32,223 25,856 2,167 4,200 28,023	59.99%	PFA*	2
Rock Creek Center 55B West Frederick Street Walkersville, MD 21793	Special Ed	120	75	63%	13	2021(Orig)	79,474	0.48%	PFA*	None
Sabillasville Environmental School A Classical Charter 16210-B Sabillasville. Rd. Sabillasville, MD 21780	K-6	180	154	86%	15	1964(Orig)	27,000	57.53%		None
Spring Ridge Elem. 9051 Ridgefield Dr. Frederick, MD 21701	PreK-5 SpEdPreK	647	611	94%	20	1991(Orig)	66,276	56.93%	PFA*	None
Sugarloaf Elementary 3400 Stone Barn Drive Frederick, Maryland 21704	K-5	754	826	110%	12.9	2018 (Orig)	97,869	8.80%	PFA*	None
Thurmont Elementary 805 East Main Street Thurmont, MD 21788	3-5	368	276	75%	15.31	Total 1955(Orig) 1959 A 1976 A	64,250 18,550 20,729 24,971	53.68%	PFA*	None
Thurmont Middle 408 East Main Street Thurmont, MD 21788	6-8	924	529	57%	13	Total 1950 (Orig) 1955 A 1958 A 1976 A 2002 A 1960 R 1976 R	135,260 22,108 12,873 20,502 34,387 45,390 22,108 11,263	55.84%	PFA*	None
Thurmont Primary 7989 Rocky Ridge Road Thurmont, MD 21788	PreK-2	470	309	66%	13.47	Total 2001 (Orig) 2006 A 2006 R	66,334 49,600 16,734 2,850	45.48%		None
Tuscarora Elementary 6321 Lambert Drive Frederick, Maryland 21703	PreK-5	633	772	122%	13.39	2004 (Orig)	86,938	44.36%	PFA*	6
Tuscarora High 5312 Ballenger Creek Pike Frederick, MD 21703	9-12	1,749	1,675	96%	46.49	Total 2003 (Orig) 2008 A	257,062 224,652 32,410	43.70%	PFA*	None

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Twin Ridge Elem. 1106 Leafy Hollow Ct. Mount Airy, MD 21771	SpEdPreK-5	681	658	97%	17	1992 (Orig)	68,900	56.42%	PFA*	None
Urbana Elementary 3554 Urbana Pike Frederick, MD 21704	SpEdPreK-5	764	667	87%	19.87	Total 2020 (Replacement)	98,178	3.16%	PFA*	None
Urbana High 3471 Campus Drive Jamsville, MD 21754	9-12	1,899	1,912	101%	59.7	Total 1995 (Orig) 2005 A	249,609 208,000 41,609	51.49%	PFA*	4
Urbana Middle 3511 Pontius Court Jamsville, MD 21754	6-8	1,020	1,119	110%	26.18	Total 2006 (Orig) 2015 A	145,135 125,049 20,086	42.36%	PFA*	None
Valley Elementary 3519 Jefferson Pike Jefferson, MD 21755	PreK-5	499	488	98%	31.71	Total 1967 (Orig) 1974 A 1974 R	59,989 40,404 19,585 2,485	57.78%	PFA*	2
Walkersville Elem. 83 Frederick Street Walkersville, MD 21793	PreK-5	701	690	98%	15	Total 1974 (Orig) 2011A 2011R	89,514 54,454 35,060 12,163	49.01%	PFA*	1
Walkersville High 81 Frederick Street Walkersville, MD 21793	9-12	1,065	1,194	112%	35	Total 1976 (Orig) 1999 A 1998 R (Sci) 1999 R	181,416 156,500 24,916 8,522 2,130	59.47%	PFA*	8
Walkersville Middle 55 Frederick Street Walkersville, MD 21793	6-8	1,105	830	75%	28.68	Total 1961 (Orig) 1985 A 1998 A 1998 R	119,353 76,880 3,241 40,232 7,355	55.41%	PFA*	None
Waverley Elem. 201 Waverley Drive Frederick, MD 21702	PreK-5 SpEdPreK	1,019	828	81%	18.17	Total 2022 (Replacement)	130,225	58.50%	PFA*	None
West Frederick Middle 515 West Patrick St. Frederick, MD 21701	6-8	1,094	756	69%	12	Total 1958 (orig) 2010 R 2010 A	166,439 143,363 143,363 23,076	41.13%	PFA*	None
Whittier Elementary 2400 Whittier Drive Frederick, MD 21702	PreK-5 SpEdPreK	624	706	113%	10.126	1998 (Orig)	81,244	49.10%	PFA*	8

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Windsor Knolls Middle 11150 Windsor Road Ijamsville, MD 21754	6-8	978	737	75%	57	Total 1993 (Orig) 1999 A	116,644 98,000 18,644	55.58%		None
Wolfsville Elem. 12520 Wolfsville Rd. Smithsburg, MD 21783	PreK-5	200	157	79%	14	Total 1959 (Orig) 2000 A 2000 R	41,657 20,091 21,566 5,000	56.59%	PFA*	None
Woodsboro Elementary 101 Liberty Road Woodsboro, MD 21798	PreK-2	166	138	83%	5	Total 1952 (Orig) 1959 A 1973 A	28,557 8,425 175 19,957	53.73%	PFA*	None
Yellow Springs Elem. 8717 Yellow Springs Rd. Frederick, MD 21702	PreK-5	453	584	129%	17	Total 1957 (Orig) 1966 A 1974 A	52,600 20,442 7,013 25,145	54.00%		8

NOTE: Physical Condition of the Building is based on the Facility Condition Index (FCI) of the building
FCI=Deferred Maintenance Cost/Current Replacement Cost International Facility Management Association (IFMA)

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V. Appendix B: FCPS Major Projects Timeline and Impacts on Capacity

Figure 7A: Proposed Timeline for Major Projects and Impacts on Capacity, Fiscal Years 2024-2032

CONSTRUCTION SCHEDULE

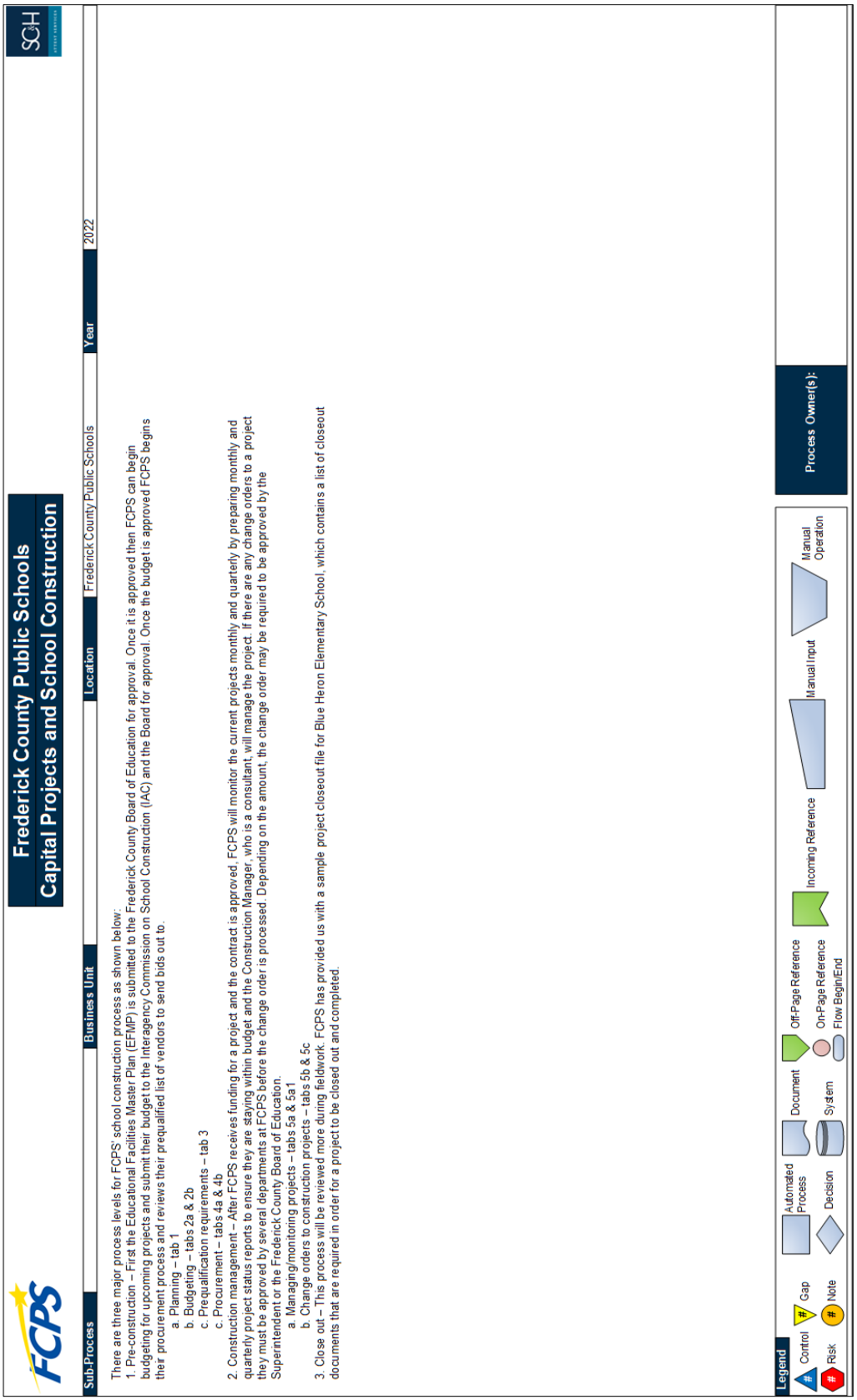
School Year	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	2030-2031	2031-2032	2032-2033
Fiscal Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
MAJOR PROJECTS										
Brunswick ES Replacement	Open									
Crestwood MS Addition		Open								
Green Valley ES Replacement			Open							
Valley ES Replacement	Redistricting		Open							
Yellow Springs ES Replacement		Potential Redistricting		Open						
Middletown Co-Located ES/MS					Open					
New Elementary School Placeholder (east Frederick area)	Land Acquisition	Redistricting			Open					
Brunswick HS Replacement						Open				
Liberty ES Replacement			Potential Redistricting		Open					
Walkersville MS Modernization							Open			
New Elementary School Placeholder (east or south Frederick area)					Redistricting			Open		
Middletown HS									Open	
New High School Placeholder	Land Acquisition							Redistricting		
Pre-K Expansion Needs						Open				
MINOR PROJECTS										
Thurmont ES Limited Renovation	Open									
Monocacy ES Limited Renovation		Open								
Ballenger Creek ES Limited Renovation			Open							
Spring Ridge ES Limited Renovation			Open							
New Bus Depot	Land Acquisition			Open						
Twin Ridge ES Limited Renovation				Open						
Hillcrest ES Limited Renovation					Open					
Limited Renovations (Locations TBD)				At least one building opening per year						

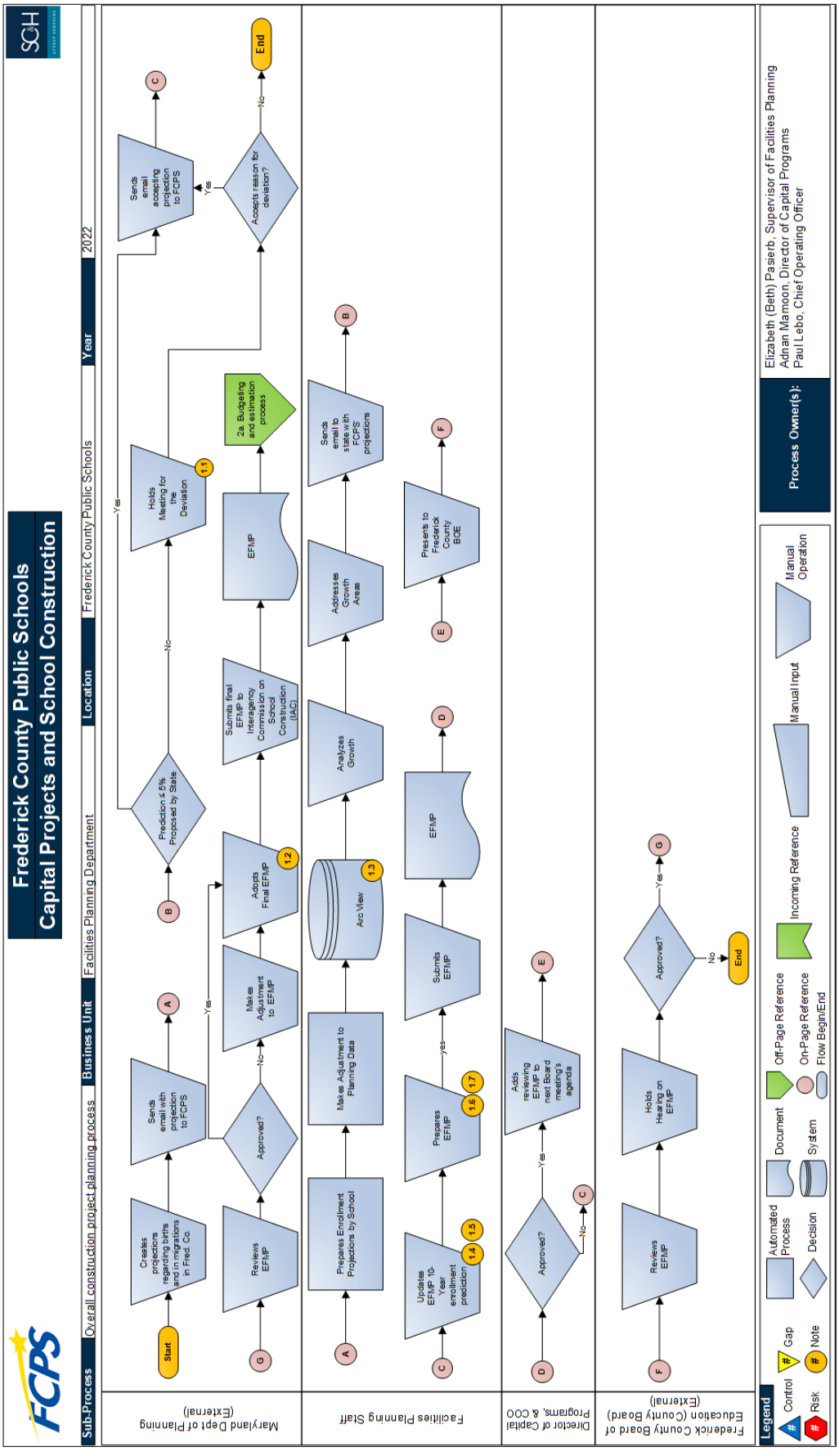
	Planning	Design	Construction
Elementary			
Middle			
High			
Other			
Level TBD			

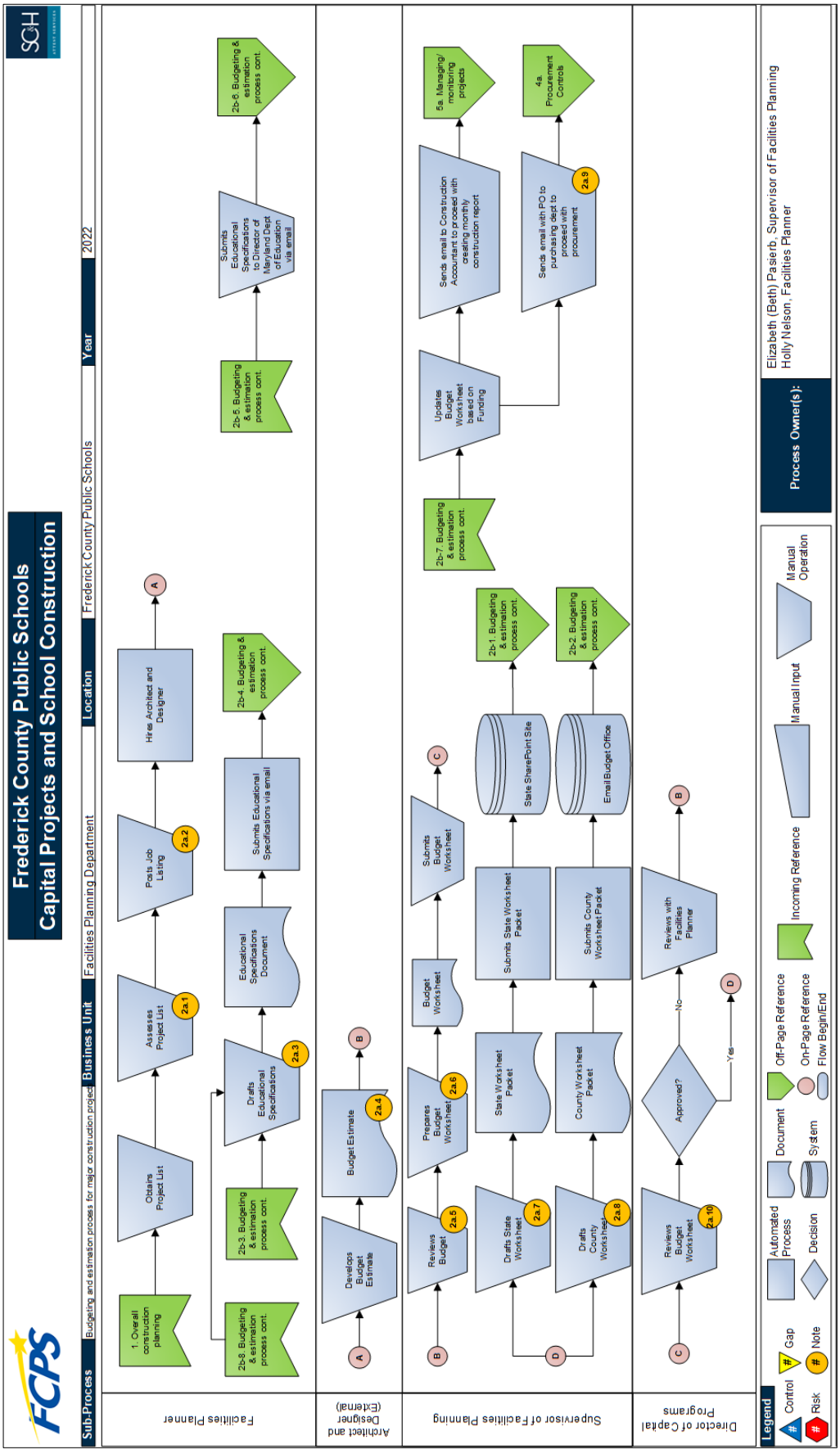
SYSTEMWIDE STATISTICS

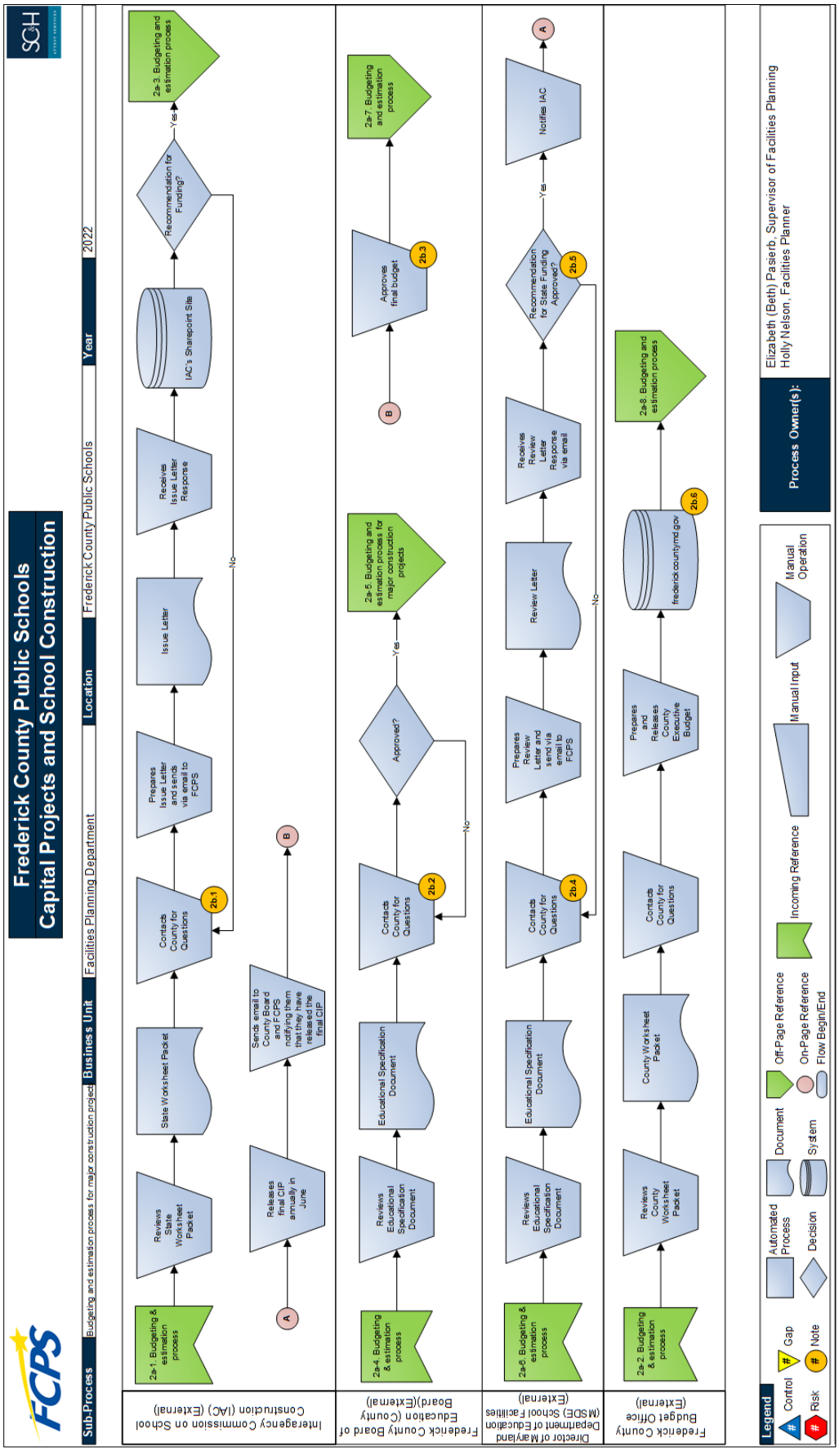
Elementary										
Projected Enrollment	21,786	22,330	22,723	23,205	23,265	23,410	23,565	23,451	23,445	23,276
Total State Rated Capacity (includes new capacity)	21,676	21,676	22,146	22,438	23,660	23,660	23,660	24,405	24,405	24,405
New Capacity	333	0	470	292	1222	0	0	745	0	0
Projected Percent SRC (includes new capacity)	101%	103%	103%	103%	98%	99%	100%	96%	96%	95%
Middle										
Projected Enrollment	10,542	10,676	10,867	11,195	11,726	12,015	12,011	12,020	12,077	12,355
Total State Rated Capacity (includes new capacity)	12,921	13,240	13,240	13,240	13,240	13,240	13,240	13,240	13,240	13,240
New Capacity	0	319	0	0	0	0	0	0	0	0
Projected Percent SRC (includes new capacity)	82%	81%	82%	85%	89%	91%	91%	91%	91%	93%
High										
Projected Enrollment	14,903	15,135	15,145	15,252	15,333	15,627	15,888	16,485	16,864	16,903
Total State Rated Capacity (includes new capacity)	15,001	15,061	15,121	15,181	15,181	15,181	15,181	15,181	15,181	15,181
New Capacity	60	60	60	60	0	0	0	0	0	0
Projected Percent SRC (includes new capacity)	99%	100%	100%	100%	101%	103%	105%	109%	111%	111%

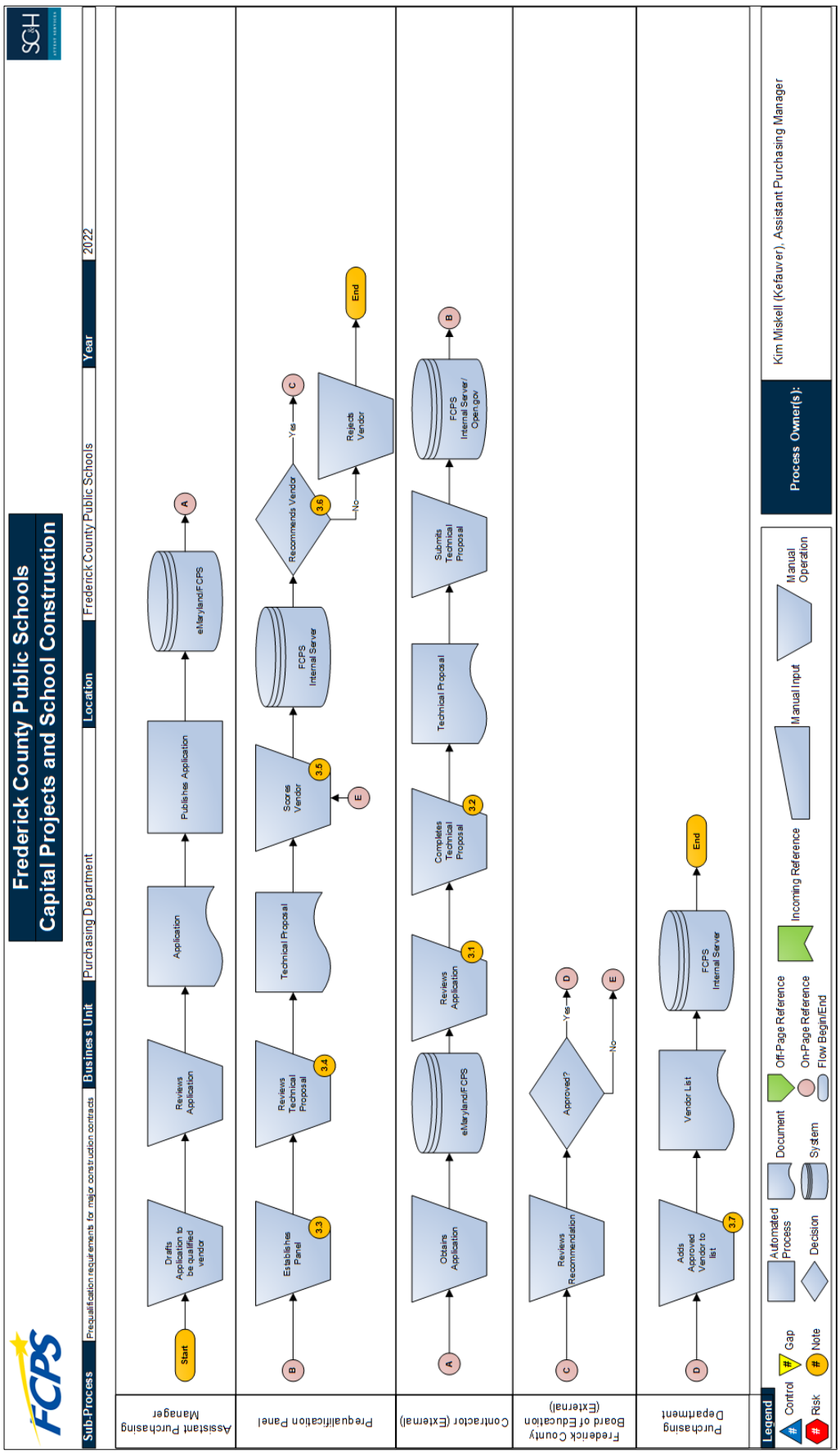
V. Appendix C: Process-level Flowcharts

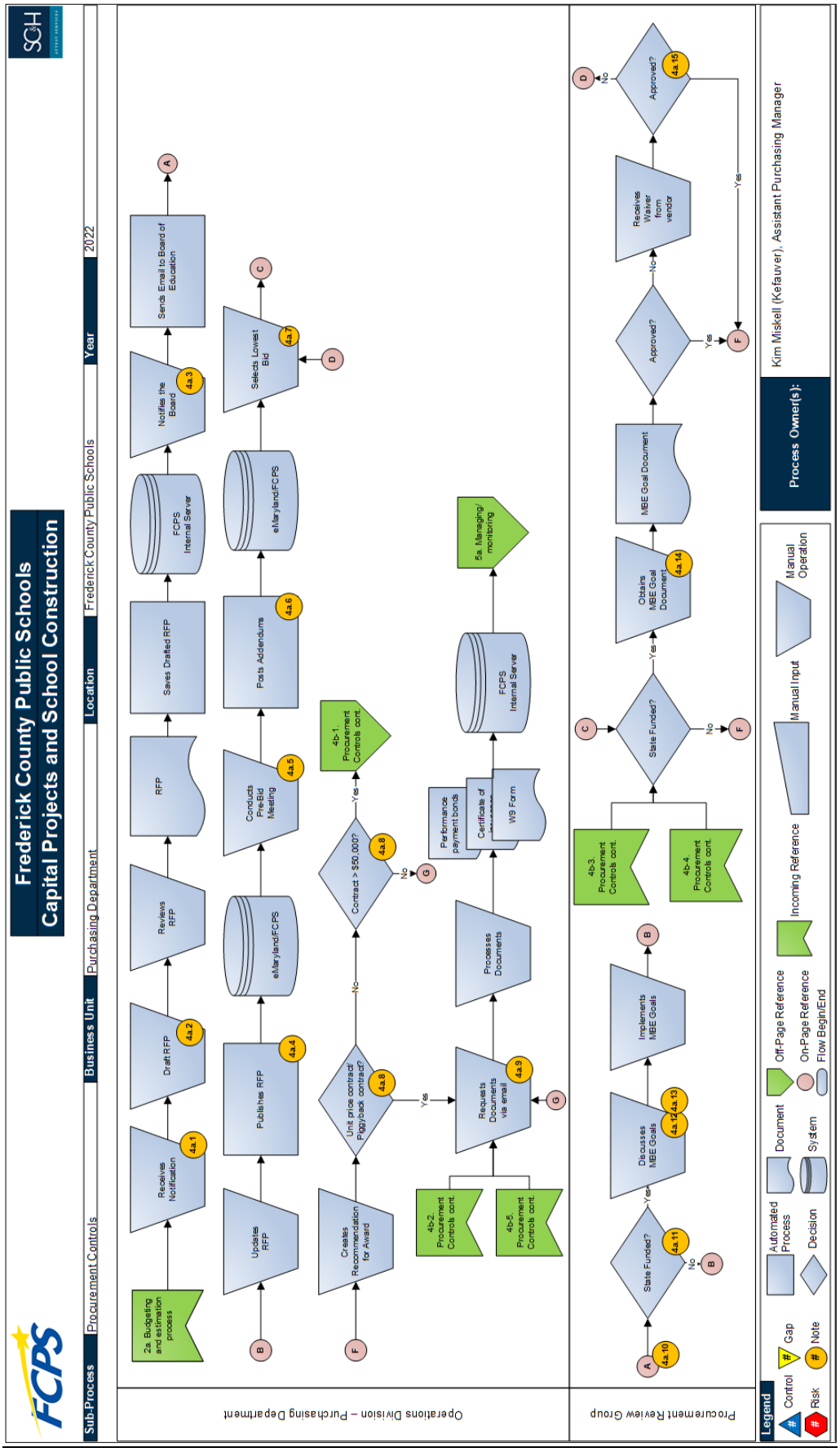


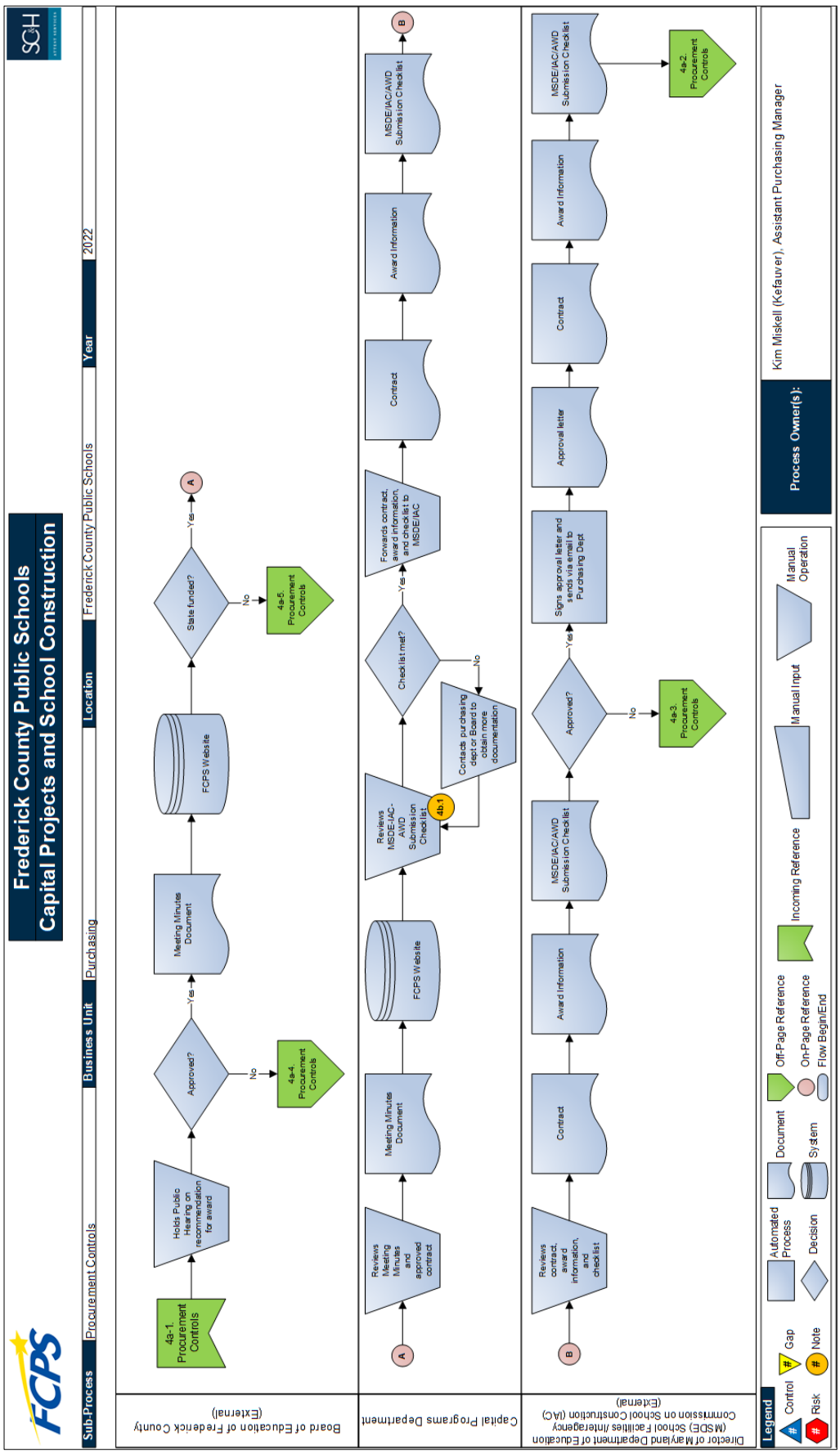

Frederick County Public Schools
Capital Projects and School Construction
FCPS
SCH
Sub-Process: Overall construction project planning process
Business Unit: Facilities Planning Department
Location: Frederick County Public Schools
Year: 2022
Maryland Dept of Planning (External)
Facilities Planning Staff
Director of Capital Programs, & COO
Frederick County Board of Education (County Board) (External)
Start
Creates projections regarding births and in migrations in Fred. Co.
Sends email with projection to FCPS
Reviews EFMP
Approved?
Makes Adjustment to EFMP
Adopts Final EFMP
Prediction ≤ 5% Proposed by State
Holds Meeting for the Deviation
Sends email accepting projection to FCPS
2a. Budgeting and estimation process
EFMP
Submits final EFMP to Interagency Commission on School Construction (IAC)
Accepts reason for deviation?
End
Prepares Enrollment Projections by School
Makes Adjustment to Planning Data
Arc View
Analyzes Growth
Addresses Growth Areas
Sends email with statistics with FCPS projections
Updates EFMP 10-Year enrollment prediction
Prepares EFMP
Submits EFMP
EFMP
Presents to Frederick County BOE
Approved?
Adds reviewing EFMP to next Board meeting's agenda
Reviews EFMP
Holds Hearing on EFMP
Approved?
End
Legend
Control
Risk
Gap
Note
Automated Process
Decision
Document
System
Off-Page Reference
On-Page Reference
Flow Begin/End
Incoming Reference
Manual Input
Manual Operation
Process Owner(s):
Elizabeth (Beth) Pasierb, Supervisor of Facilities Planning
Adnan Mamoon, Director of Capital Programs
Paul Lebo, Chief Operating Officer

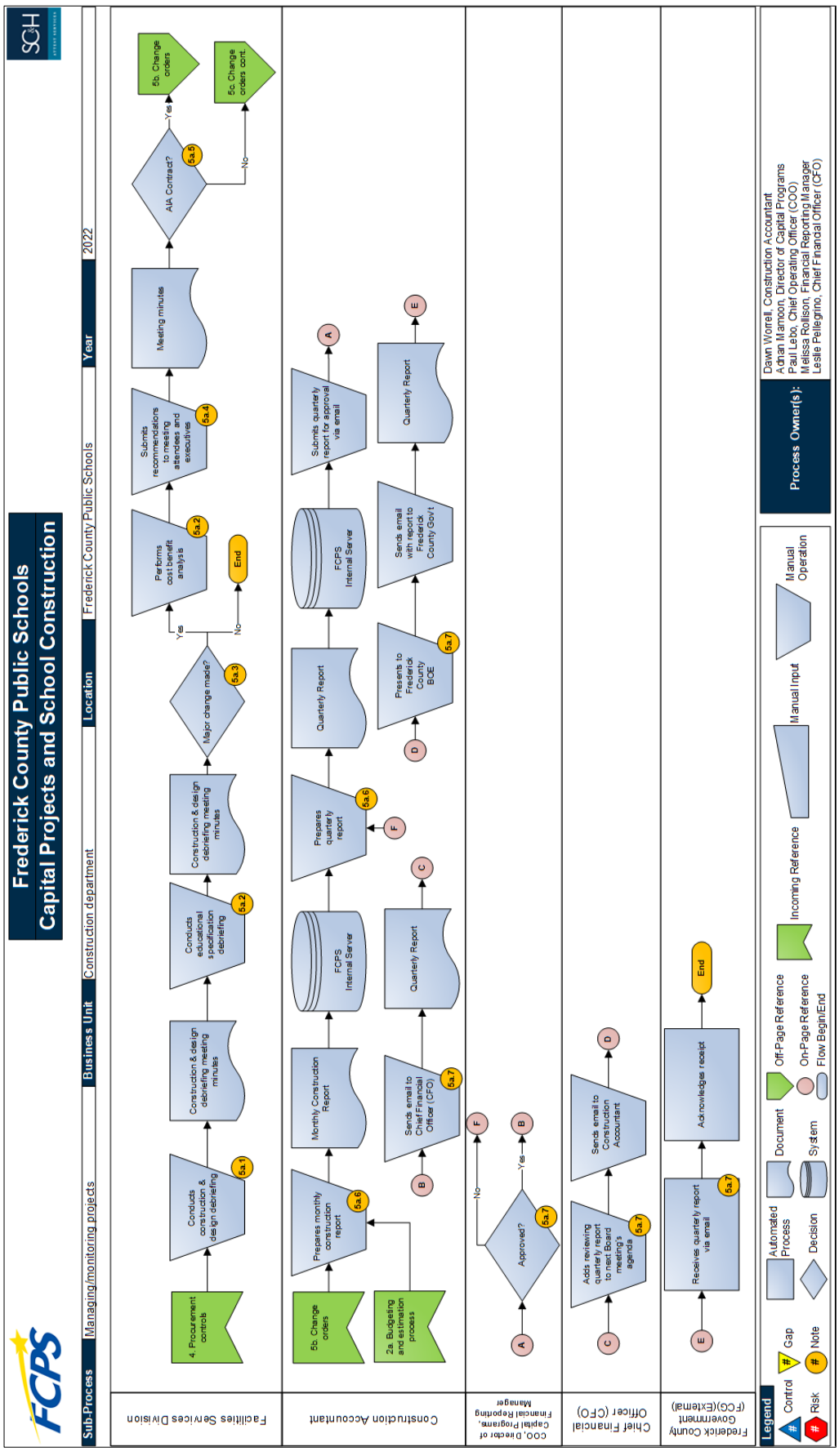

Frederick County Public Schools
Capital Projects and School Construction
FCPS
SCH
Sub-Process
Budgeting and estimation process for major construction project
Business Unit
Facilities Planning Department
Location
Frederick County Public Schools
Year
2022
Facilities Planner
Architect and Designer (External)
Supervisor of Facilities Planning
Director of Capital Programs
1. Overall construction planning
Obtains Project List
Assesses Project List
2a.1
Posts Job Listing
2a.2
Hires Architect and Designer
A
2b-8. Budgeting & estimation process cont.
2b-3. Budgeting & estimation process cont.
Drafts Educational Specifications
2a.3
Educational Specifications Document
Submits Educational Specifications via email
2b-4. Budgeting & estimation process cont.
2b-5. Budgeting & estimation process cont.
Submits Educational Specifications to Director of Maryland Dept of Education via email
2b-6. Budgeting & estimation process cont.
Develops Budget Estimate
Budget Estimate
2a.4
B
Reviews Budget
2a.5
Prepares Budget Worksheet
2a.6
Budget Worksheet
Submits Budget Worksheet
C
Drafts State Worksheet
2a.7
State Worksheet Packet
Submits State Worksheet Packet
State SharePoint Site
2b-1. Budgeting & estimation process cont.
Drafts County Worksheet
2a.8
County Worksheet Packet
Submits County Worksheet Packet
Email Budget Office
2b-2. Budgeting & estimation process cont.
2b-7. Budgeting & estimation process cont.
Updates Budget Worksheet based on Funding
Sends email to Construction Accountant to proceed with creating monthly construction report
5a. Managing/ monitoring projects
Sends email with PO to purchasing dept to proceed with procurement
2a.9
4a. Procurement Controls
Reviews Budget Worksheet
2a.10
Approved?
No
Yes
D
Reviews with Facilities Planner
Process Owner(s):
Elizabeth (Beth) Pasierb, Supervisor of Facilities Planning
Holly Nelson, Facilities Planner
Legend
Control
Gap
Risk
Note
Automated Process
Decision
Document
System
Off-Page Reference
On-Page Reference
Flow Begin/End
Incoming Reference
Manual Input
Manual Operation

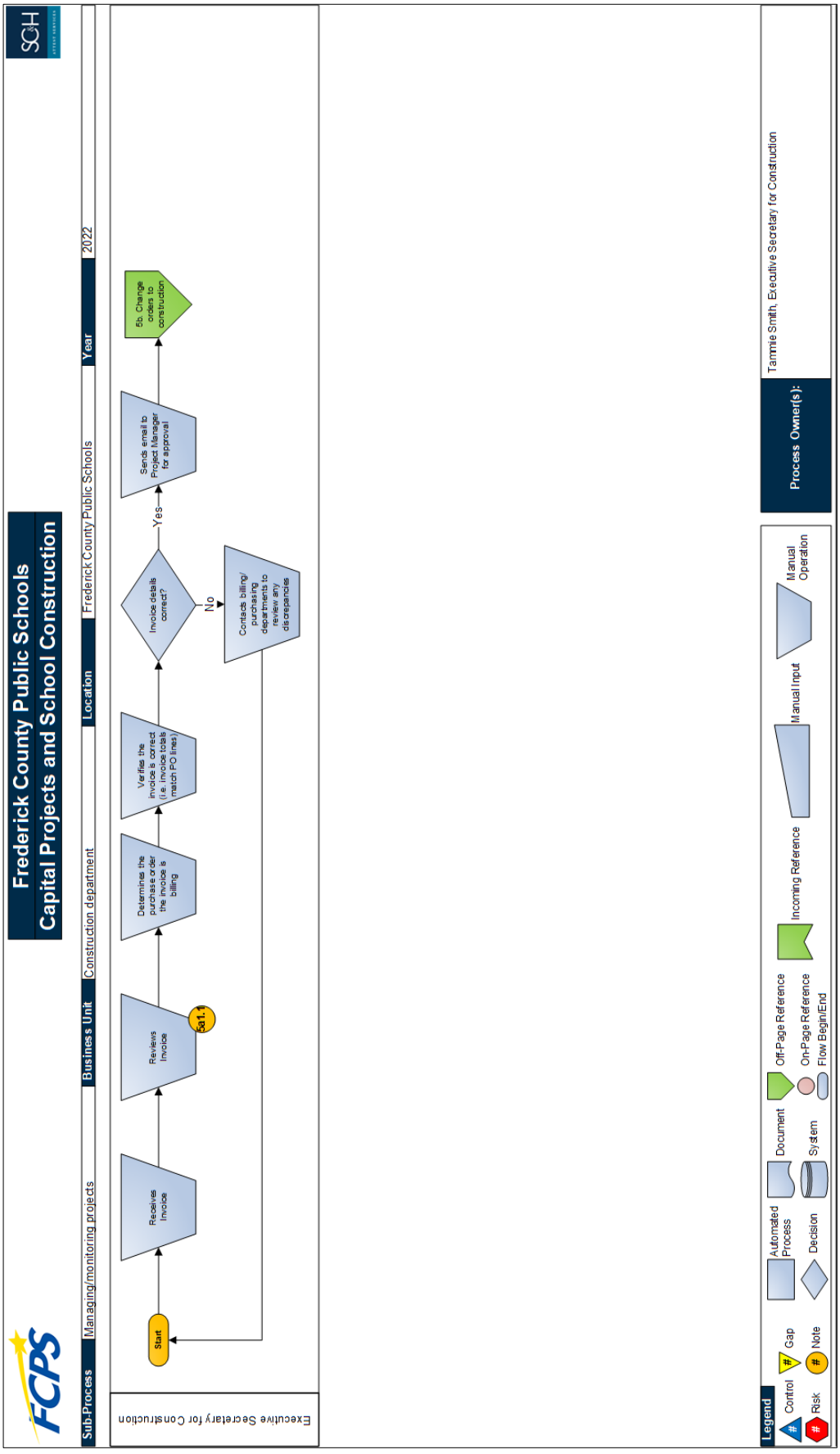

Frederick County Public Schools
Capital Projects and School Construction
Sub-Process
Budgeting and estimation process for major construction project
Business Unit
Facilities Planning Department
Location
Frederick County Public Schools
Year
2022
Interagency Commission on School Construction (IAC) (External)
Frederick County Board of Education (County Board)(External)
Director of Maryland Department of Education (MSDE) School Facilities (External)
Frederick County Budget Office (External)
2a-1. Budgeting & estimation process
Reviews State Worksheet Packet
State Worksheet Packet
Contacts County for Questions
2b.1
Prepares Issue Letter and sends via email to FCPS
Issue Letter
Receives Issue Letter Response
IAC's Sharepoint Site
Recommendation for Funding?
Yes
No
2a-3. Budgeting and estimation process
A
Releases final CIP annually in June
Sends email to County Board and FCPS notifying them that they have released the final CIP
B
2a-4. Budgeting & estimation process
Reviews Educational Specification Document
Educational Specification Document
Contacts County for Questions
2b.2
Approved?
Yes
No
2a-5. Budgeting and estimation process for major construction projects
B
Approves final budget
2b.3
2a-7. Budgeting and estimation process
2a-6. Budgeting & estimation process
Reviews Educational Specification Document
Educational Specification Document
Contacts County for Questions
2b.4
Prepares Review Letter and send via email to FCPS
Review Letter
Receives Review Letter Response via email
Recommendation for State Funding Approved?
2b.5
Yes
No
Notifies IAC
A
2a-2. Budgeting & estimation process
Reviews County Worksheet Packet
County Worksheet Packet
Contacts County for Questions
Prepares and Releases County Executive Budget
frederickcountymd.gov
2b.6
2a-8. Budgeting and estimation process
Legend
Control
Gap
Risk
Note
Automated Process
Decision
Document
System
Off-Page Reference
On-Page Reference
Flow Begin/End
Incoming Reference
Manual Input
Manual Operation
Process Owner(s):
Elizabeth (Beth) Pasierb, Supervisor of Facilities Planning
Holly Nelson, Facilities Planner

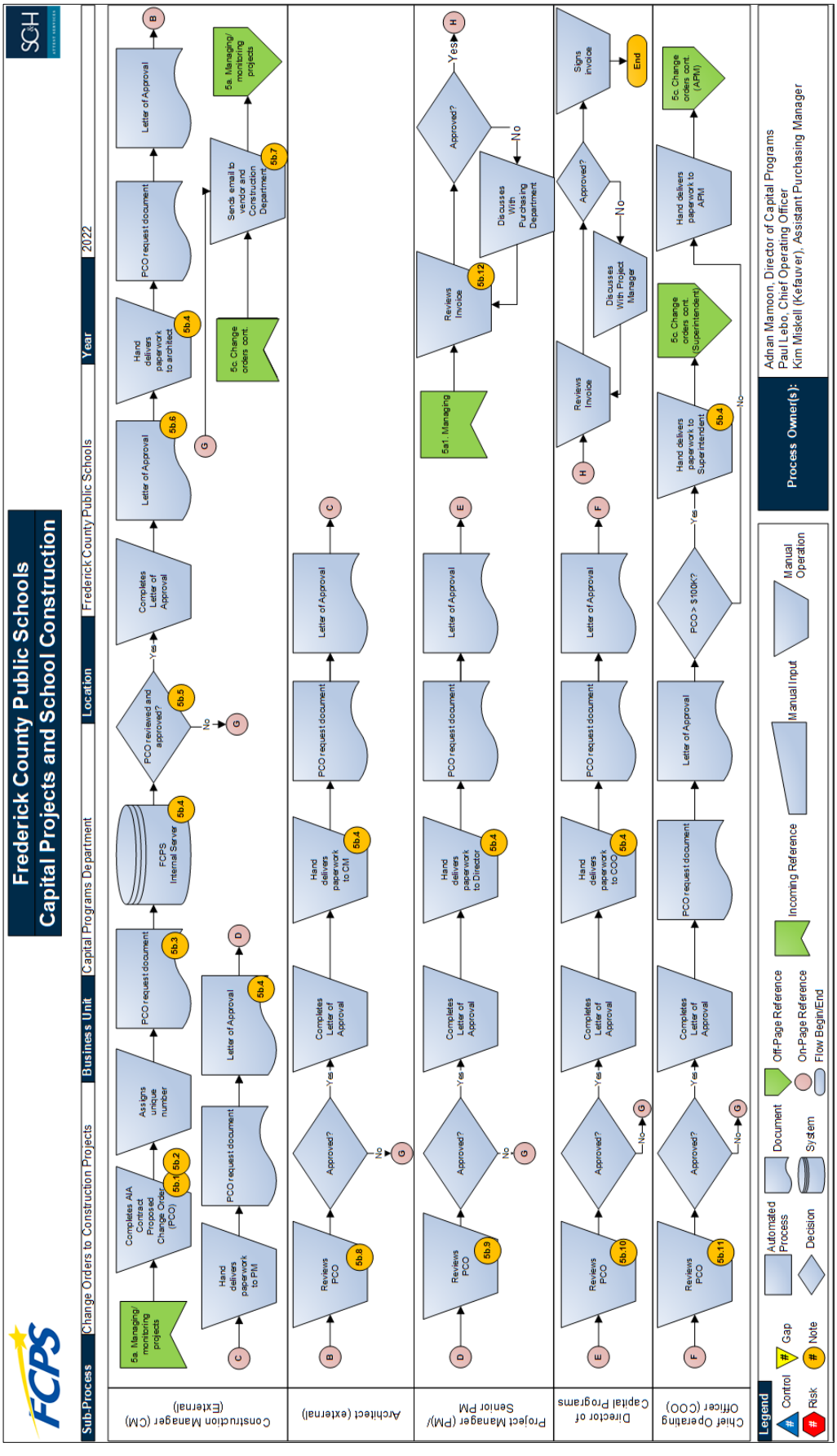

Frederick County Public Schools
Capital Projects and School Construction
Sub-Process: Prequalification requirements for major construction contracts
Business Unit: Purchasing Department
Location: Frederick County Public Schools
Year: 2022
Assistant Purchasing Manager
Prequalification Panel
Contractor (External)
Frederick County Board of Education (External)
Purchasing Department
Start
Drafts Application to be qualified vendor
Reviews Application
Application
Publishes Application
eMarylandFCPS
A
Establishes Panel
3.3
Reviews Technical Proposal
3.4
Technical Proposal
Scores Vendor
3.5
E
FCPS Internal Server
Recommends Vendor
3.6
Yes
C
No
Rejects Vendor
End
B
Obtains Application
eMarylandFCPS
Reviews Application
3.1
Completes Technical Proposal
3.2
Technical Proposal
Submits Technical Proposal
FCPS Internal Server/ Opengov
B
Reviews Recommendation
Approved?
Yes
D
No
E
Adds Approved Vendor to list
3.7
Vendor List
FCPS Internal Server
End
Legend
Control
Gap
Risk
Note
Automated Process
Decision
Document
System
Off-Page Reference
On-Page Reference
Flow Begin/End
Incoming Reference
Manual Input
Manual Operation
Process Owner(s):
Kim Miskell (Kefauver), Assistant Purchasing Manager

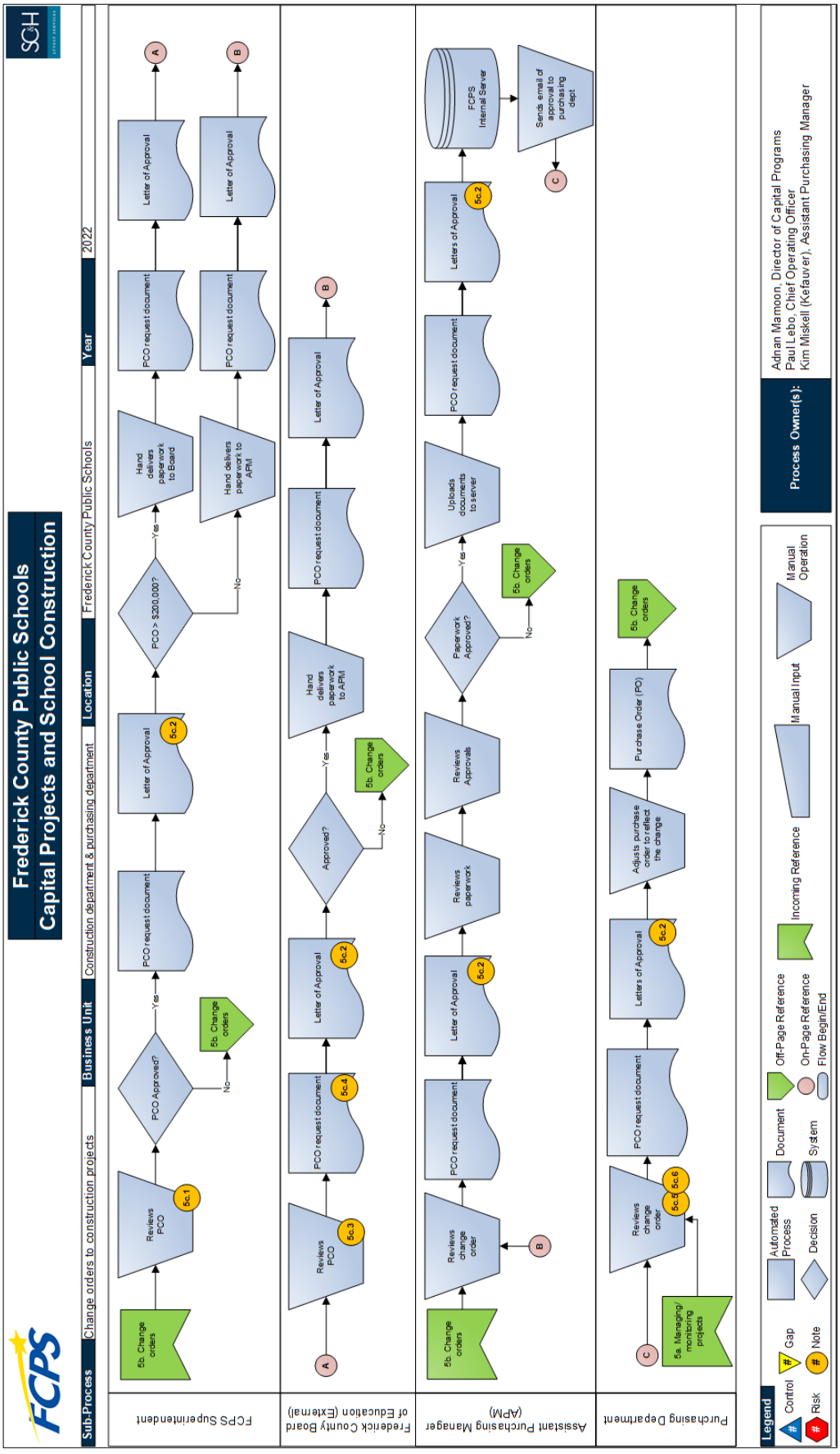

Frederick County Public Schools
Capital Projects and School Construction
Sub-Process: Procurement Controls
Business Unit: Purchasing Department
Location: Frederick County Public Schools
Year: 2022
Operations Division – Purchasing Department
Procurement Review Group
2a. Budgeting and estimation process
Receives Notification
Draft RFP
Reviews RFP
RFP
Saves Drafted RFP
FCPS Internal Server
Notifies the Board
Sends Email to Board of Education
Updates RFP
Publishes RFP
eMaryland/FCPS
Conducts Pre-Bid Meeting
Posts Addendums
eMaryland/FCPS
Selects Lowest Bid
Creates Recommendation for Award
Unit price contract Piggyback contract?
Contract > $50,000?
4b-1. Procurement Controls cont.
Requests Documents via email
Processes Documents
Performance payment bonds
Certificate of
W9 Form
FCPS Internal Server
5a. Managing/ monitoring
4b-2. Procurement Controls cont.
4b-5. Procurement Controls cont.
State Funded?
Discusses MBE Goals
Implements MBE Goals
4b-3. Procurement Controls cont.
4b-4. Procurement Controls cont.
State Funded?
Obtains MBE Goal Document
MBE Goal Document
Approved?
Receives Waiver from vendor
Approved?
Legend
Control
Gap
Risk
Note
Automated Process
Decision
Document
System
Off-Page Reference
On-Page Reference
Flow Begin/End
Incoming Reference
Manual Input
Manual Operation
Process Owner(s):
Kim Miskell (Kefauver), Assistant Purchasing Manager


Frederick County Public Schools
Capital Projects and School Construction
Sub-Process: Procurement Controls
Business Unit: Purchasing
Location: Frederick County Public Schools
Year: 2022
Board of Education of Frederick County (External)
Capital Programs Department
Director of Maryland Department of Education (MSDE) School Facilities /Interagency Commission on School Construction (IAC) (External)
4a-1. Procurement Controls
Holds Public Hearing on recommendation for award
Approved?
Yes
No
4a-4. Procurement Controls
Meeting Minutes Document
FCPS Website
State funded?
Yes
No
4a-5. Procurement Controls
A
Reviews Meeting Minutes and approved contract
Meeting Minutes Document
FCPS Website
Reviews MSDE-IAC-AWD Submission Checklist
4b.1
Contacts purchasing dept or Board to obtain more documentation
Checklist met?
Yes
No
Forwards contract, award information, and checklist to MSDE/IAC
Contract
Award Information
MSDE/IAC/AWD Submission Checklist
B
Reviews contract, award information, and checklist
Contract
Award Information
MSDE/IAC/AWD Submission Checklist
Approved?
Yes
No
4a-3. Procurement Controls
Signs approval letter and sends via email to Purchasing Dept
Approval letter
Contract
Award Information
MSDE/IAC/AWD Submission Checklist
4a-2. Procurement Controls
Process Owner(s):
Kim Miskell (Kefauver), Assistant Purchasing Manager
Legend
Control
Gap
Risk
Note
Automated Process
Decision
Document
System
Off-Page Reference
On-Page Reference
Flow Begin/End
Incoming Reference
Manual Input
Manual Operation


Frederick County Public Schools
Capital Projects and School Construction
Sub-Process
Managing/monitoring projects
Business Unit
Construction department
Location
Frederick County Public Schools
Year
2022
Facilities Services Division
Construction Accountant
COO, Director of Capital Programs, Financial Reporting Manager
Chief Financial Officer (CFO)
Frederick County Government (FCG)(External)
4. Procurement controls
Conducts construction & design debriefing
5a.1
Construction & design debriefing meeting minutes
Conducts educational specification debriefing
5a.2
Construction & design debriefing meeting minutes
Major change made?
5a.3
Yes
No
End
Performs cost benefit analysis
5a.2
Submits recommendations to meeting attendees and executives
5a.4
Meeting minutes
AIA Contract?
5a.5
Yes
5b. Change orders
No
5c. Change orders sent
5b. Change orders
Prepares monthly construction report
5a.6
Monthly Construction Report
FCPS Internal Server
Prepares quarterly report
5a.6
Quarterly Report
FCPS Internal Server
Submits quarterly report for approval via email
A
2a. Budgeting and estimation process
Sends email to Chief Financial Officer (CFO)
5a.7
Quarterly Report
Presents to Frederick County BOE
5a.7
Sends email with report to Frederick County Govt
Quarterly Report
E
F
No
A
Approved?
5a.7
Yes
B
C
Adds reviewing quarterly report to next Board meeting's agenda
5a.7
Sends email to Construction Accountant
D
E
Receives quarterly report via email
5a.7
Acknowledges receipt
End
Legend
Control
Gap
Risk
Note
Automated Process
Decision
Document
System
Off-Page Reference
On-Page Reference
Flow Begin/End
Incoming Reference
Manual Input
Manual Operation
Process Owner(s):
Dawn Worrell, Construction Accountant
Adnan Mamoon, Director of Capital Programs
Paul Lebo, Chief Operating Officer (COO)
Melissa Rollison, Financial Reporting Manager
Leslie Pellegrino, Chief Financial Officer (CFO)


FCPS
Frederick County Public Schools
Capital Projects and School Construction
SCH
Sub-Process
Managing/monitoring projects
Business Unit
Construction department
Location
Frederick County Public Schools
Year
2022
Executive Secretary for Construction
Start
Receives Invoice
Reviews Invoice
Sa1.1
Determines the purchase order the invoice is billing
Verifies the invoice is correct (i.e. invoice totals match PO lines)
Invoice details correct?
No
Contacts billing/ purchasing departments to review any discrepancies
Yes
Sends email to Project Manager for approval
5b. Change orders to construction
Legend
Control
Gap
Risk
Note
Automated Process
Decision
Document
System
Off-Page Reference
On-Page Reference
Flow Begin/End
Incoming Reference
Manual Input
Manual Operation
Process Owner(s):
Tammie Smith, Executive Secretary for Construction


Frederick County Public Schools
Capital Projects and School Construction
Sub-Process: Change Orders to Construction Projects
Business Unit: Capital Programs Department
Location: Frederick County Public Schools
Year: 2022
Construction Manager (CM) (External)
Architect (external)
Project Manager (PM)/ Senior PM
Director of Capital Programs
Chief Operating Officer (COO)
5a. Managing/ monitoring projects
Hand delivers paperwork to PM
Completes AIA Contract Proposed Change Order (PCO)
Assigns unique number
PCO request document
Letter of Approval
FCPS Internal Server
PCO reviewed and approved?
Completes Letter of Approval
Hand delivers paperwork to architect
PCO request document
Letter of Approval
5c. Change orders cont.
Sends email to vendor and Construction Department
5a. Managing/ monitoring projects
Reviews PCO
Approved?
Completes Letter of Approval
Hand delivers paperwork to CM
PCO request document
Letter of Approval
Reviews PCO
Approved?
Completes Letter of Approval
Hand delivers paperwork to Director
PCO request document
Letter of Approval
5a1. Managing
Reviews Invoice
Approved?
Discusses With Purchasing Department
Reviews PCO
Approved?
Completes Letter of Approval
Hand delivers paperwork to COO
PCO request document
Letter of Approval
Reviews Invoice
Approved?
Discusses With Project Manager
Signs invoice
End
Reviews PCO
Approved?
Completes Letter of Approval
PCO request document
Letter of Approval
PCO > $100K?
Hand delivers paperwork to Superintendent
5c. Change orders cont. (Superintendent)
Hand delivers paperwork to APM
5c. Change orders cont. (APM)
Yes
No
Legend
Control
Risk
Gap
Note
Automated Process
Decision
Document
System
Off-Page Reference
On-Page Reference
Flow Begin/End
Incoming Reference
Manual Input
Manual Operation
Process Owner(s):
Adnan Mamoon, Director of Capital Programs
Paul Lebo, Chief Operating Officer
Kim Miskell (Kefauver), Assistant Purchasing Manager


Frederick County Public Schools
Capital Projects and School Construction
Sub-Process: Change orders to construction projects
Business Unit: Construction department & purchasing department
Location: Frederick County Public Schools
Year: 2022
FCPS Superintendent
Frederick County Board of Education (External)
Assistant Purchasing Manager (APM)
Purchasing Department
5b. Change orders
Reviews PCO
PCO Approved?
No
Yes
PCO request document
Letter of Approval
PCO > $200,000?
Hand delivers paperwork to Board
Hand delivers paperwork to APM
Approved?
Reviews change order
Paperwork Approved?
Uploads documents to server
FCPS Internal Server
Sends email of approval to purchasing dept
5a. Managing/ monitoring projects
Adjusts purchase order to reflect the change
Purchase Order (PO)
Manual Operation
Manual Input
Incoming Reference
Off-Page Reference
On-Page Reference
Flow Begin/End
Document
System
Automated Process
Decision
Gap
Note
Control
Risk
Legend
Process Owner(s):
Adnan Mamoon, Director of Capital Programs
Paul Lebo, Chief Operating Officer
Kim Miskell (Kefauver), Assistant Purchasing Manager

Frederick County Public Schools
Capital Projects and School Construction

Notes

1.1 The state reconciles their data and predictions with FCPS. The state reviews how FCPS calculated their prediction and how their data behind their prediction is generated.

1.2 EFMP is required by the state and the state of Maryland has a prescriptive outline as to what information they want in the document. It is due to the state every year on July 1st. The BOE adopts the final EFMP and capital budget, and then FCPS submits the EFMP to the Interagency Commission on School Construction (IAC) by July 1 each year.

The Board of Education (Board) maintains long-term facilities master plans for constructing, renovating and maintaining public school facilities in Frederick County. The master plans (i.e. the EFMP) shall attempt to balance the need for new seats with the need for renovations to existing buildings. The Board reviews these plans annually and adopt a plan after considering public comment. The Board works cooperatively with the State of Maryland, Frederick County Executive and County Council, and other elected officials to obtain adequate state and local funding and to implement the plans.

1.3 FCPS use Arc View which is the industry standard solution to compile their data.

1.4 The EFMP process starts annually around March. The Facilities Planning staff gathers enrollment data and using that they put the enrollment projection worksheets together. Further, they also gather data from the State Planning Department, and Health Department about in migration and out migration bursts for Frederick County to their data set to have more accurate predictions. The Facilities Planning staff includes the Supervisor of Facilities Planning, the Facilities Planner, the Geographic Information Systems (GIS) Analyst, and the Administrative Assistant.

1.5 Once the projections are accepted by the state, the Facilities Planning staff use those systemwide projections and use them as control numbers to update the 10 year enrollment projections by school so the projections then match the control numbers.

1.6 FCPS prepares and follows their set plan labeled the Educational Facilities Master Plan (EFMP). The FCPS Educational Facilities Master Plan (EFMP) is a 10 year plan that sets goals and addresses future school facility needs in response to enrollment growth, County Master Plan studies, renovation needs, changes in educational programs, state requirements and related issues. FCPS updates the EFMP annually as approved by the Board and submits it to the Maryland Department of Planning in accordance with their requirements.

1.7 Approval for the EFMP is provided after a thorough review by Capital Programs staff and the COO. There is a formal approval process for any item that is presented for the Board. A draft coversheet is submitted from the department (Capital Programs) to the Cabinet member (COO). The COO reviews, approves, and submits the Board coversheet and the document, which is uploaded into BoardDocs, which is a remote school board meeting management software FCPS uses. The superintendent's office approves the release of the agenda, which includes the draft EFMP for the Board's consideration. The document is then discussed at two public meetings and approval is provided in a public vote.

2a.1 The Facilities Planner identifies buildings that are somewhere between 30 to 35 years old, and makes decisions for renovation or new construction. FCPS' goal is to renovate a school facility after 30 to 35 years, and replace it after 60 years.

2a.2 After the architect & designer draft the construction budget, FCPS facilities planning will obtain the draft construction budget and starts to draft the main capital project budget by looking at historic data and by including estimated soft costs such as furniture, fixtures, and equipment, legal services, inspection fees and other miscellaneous costs.

2a.3 Every project must have educational specifications (ed specs) including the state rated capacity, expected number of students, and the estimated gross square FT of the new school. FCPS prepares and The Maryland State Department of Education (MSDE) approves the square footage, then FCPS applies a factor, and this results in the total square footage FCPS will budget for.

2a.4 The architect and design specialists prepare a building or a renovation estimate for the projects planned that are listed in the approved EFMP.

2a.5 The architect and designer provide budget estimates for review. Further, the Facilities Planner receives and makes adjustments according to the budget.

2a.6 The Supervisor of Facilities Planning prepares a budget worksheet for all the projects that are in the pipeline for each school. The budget worksheet consists of the Interagency Commission on School Construction (IAC) square FT estimate and the FCPS budgeted total square FT. The difference between the two is the local square FT. If there is additional space needed for recreational or park space, then the Supervisor of Facilities Planning adds an additional 35,000 square FT to the FCPS budgeted total square FT.

2a.7 The State Worksheet is drafted by the Supervisor of Facilities Planning. The worksheet includes gross area baseline in gross square footage (GSF), additions, renovations, and a summary of the total cost. The document outlines the total construction cost and lists the state share of the budget for the construction of the school. Further, the Supervisor of Facilities Planning will include the Status of Previously Approved Projects Form 102.5 which is prepared by the Construction Accountant in the packet that the Supervisor of Facilities Planning sends out to the state each year for capital funding.

2a.8 The County Worksheet Packet includes the county budget spreadsheet summary page and a detailed budget worksheet tab. The summary page will include the project list and the total budget, showing specifically the local county share and how much is requested in each fiscal year over the next six years. Further, a detailed budget worksheet tab will also be included for each of the projects that are planned.

2a.9 The procurement department works closely with the capital programs department to determine when the procurement process can begin for a school construction project. Once a construction project's budget is projected to be available in the coming fiscal year, the Executive Secretary for Construction sends the requisition they have prepared to the purchasing department and then they start the procurement steps for the project.

2a.10 The Director of Capital Programs will review and approve the budget worksheet.

2b.1 An Issue Letter is a formal follow up document that is sent by the IAC to Supervisor of Facilities Planning. The Issue Letter contains additional information the IAC needs to make their final recommendations for FCPS' final projects funding. The letter contains "A" = approved funding. "B" = approved & partially funded; or "C" = approved & outstanding issues.
If there is additional funding at the end of a project, then FCPS can use reverted funds towards a "B" project that was approved & partially funded by the state. In the IAC Issues letter there are General Submission Issues and Project Specific Submission Issues. The Supervisor of Facilities Planning addresses these issues and then submits their response back to the IAC for review in order to review final projects funding.

2b.2 Unless an educational specification has been approved as a prototype educational specification with the intent that it be used for the next several schools of the same type, an educational specification for each project must be approved by the BOE.

2b.3 Once the IAC releases the final CIP in June, the Frederick County BOE approves their final budget including both operating and capital funds from both the County and the State.

Frederick County Public Schools
Capital Projects and School Construction

Notes Continued

2b.4 Once the Facilities Planner submits the educational specifications (ed specs) to the MSDE they provide a review letter addressed to the Facilities Planner. The Facilities Planner then sends the state a response to the letter. The review letter lists comments regarding the ed specs and requests a written response for certain items by a specific date. The Facilities Planner acknowledges all the comments raised by the review letter and provides documentation to address the items that the MSDE requested a written response for. MSDE's review results in a comments letter that provides direction for future project submittals and provides suggestions for design. The Ed Spec for a capital project must be approved by both the BOE and MSDE prior to FCPS receiving funding approval.

2b.5 The Educational Specification for a capital project must be approved by both the BOE and MSDE prior to funding approval. FCPS has never been denied approval of their ed specs. However, the MSDE can and do note when the proposed size of the school exceeds what the state will participate in for funding. State share of capital funding for a project is prescriptive and is based on the approved cost/sq ft for that fiscal year as well as the demonstrated space need for that project (demonstrated capacity need for that school and adjacent schools based on enrollment projections years in the future).

2b.6 The County Executive fiscal year budget report is released in April. The FCPS budgeting office will get notified about their approved budget status on the Frederick County Budget office website and via email.

4a.1 Construction Manager (CM) and an architect drafts the RFP once notification is received. The Purchasing department compiles the RFP documentation and submits it to the Assistant Purchasing Manager for review and approval. The documentation included in the RFP includes the RFP invitation, FCPS map, general and specific terms and conditions, a letter of interest form, a technical proposal, a staffing schedule, a signature acknowledging proposal, a statutory affidavit and non-collusion certification, a certification of compliance, a vendor conflict of interest disclosure form, American Institute of Architects (AIA) Document C132-2009 - Standard Form of Agreement Between Owner and Construction Manager as Adviser, AIA Document A132-2009 - Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, AIA Document A232 – 2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, and AIA Document B132-2009 - Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition. If there is a known conflict of interest a vendor has with an employee, then the employee would not be asked to participate in the evaluation process.

4a.2 The purchasing team take the RFP to the board notifying them (via email) that they are going to be going out to bid soon.

4a.3 The pre-bid meeting consists of FCPS's architect and Construction Manager (CM) and they answer any questions they receive from bidders.

4a.4 The Assistant Purchasing Manager, Purchasing Agents and Purchasing Associates in the Purchasing Department publish the addendums to the RFP to be available to all bidders. These addendums are made publicly available on the FCPS and eMaryland web sites. Addendums are reviewed by the Capital Programs Department prior to posting. Addendums can come from the Architect (for additional, or revised information about the design of the project), from the Construction Manager (for additional, or revised information regarding project schedule, logistics, etc.), or from FCPS in response to questions received from the bidders (regarding procurement terms, clarification about bid dates, etc). The information on the addendums are reviewed for accuracy by FCPS Project Managers, myself, and purchasing department prior to issuance. There is no formal approval process for addendums.

4a.5 There is a State of Maryland requirement to post all solicitations on email, eMaryland marketplace (eMMA) and FCPS' website.

4a.6 Finally, on the bid day, bids come electronically, and the team unseal them publicly. Open.gov is the site that is used to unseal the bid documentation. The bid winner gets announced at a later date, and the purchasing team proceeds to submit recommendation to award to the board. If it is a state funded project and the MBE goal is not met, the next bidder with the best value gets selected.

4a.7 The Maryland Department of Education (MSDE)/Interagency Commission on School Construction (IAC) does not approve projects that are not state funded. The Board of Education of Frederick County approves all project awards over $50,000 unless a unit price contract or a piggyback contract that has already been awarded by the Board is being utilized. Piggyback contracts have already been approved by board, hence no further approval is required.

4a.8 Once the board approves the RFPs the purchasing department requests performance payment bonds, certificates of insurance and W9 form.

4a.9 Per FCPS Regulation 200-8, the procurement review group (PRG) must include at a minimum the MBE liaison and the Procurement Officer or a representative from the procurement office. The PRG could also include a capital improvement project manager, the project architect, the cost estimator, the construction manager, and/or other individuals selected by the Superintended or designee.
Typically, the PRG group includes the procurement officer and the capital projects project manager with input provided by the construction accountant. Final review is with the procurement office and the MBE liaison.

4a.10 The Supervisor of Facilities Planning creates, determines whether the project is state funded or not based on what the Interagency Commission on School Construction (IAC) and the County agree to fund for a given project. Any project that gets any amount of funding from the state is considered a state funded project.

4a.11 If project is state funded, Minority Business Enterprise (MBE) goals must be drafted for implementation by the vendor. If the contractor meets MBE goal, then they can move forward; Further, if they do not meet MBE goal, they have an option to submit a waiver. See - REG 200-08 MINORITY BUSINESS ENTERPRISE (MBE) PROCEDURES - Page 4 – 6, for general consideration of setting MBE goal and sub-goal. As stated in the procedures, there was a new law set as a goal that at least 14 percent of each unit of State government's total dollar value of procurement contracts for purchases and/or contracts is awarded to minority business enterprises.

4a.12 The procurement review group manages the MBE goal setting process and it consists of the purchasing and construction departments.

4a.13 If project is state funded, Minority Business Enterprise (MBE) goal have to be implemented by the vendor. The vendor provides documents to FCPS showing that they have implemented MBE goals prior to the budget being released for the school construction project. If the MBE document is not approved, the vendor is required to submit a waiver. If the waiver is not approved, the Procurement Review Group will go back and select the lowest bidder.

4a.14 If MBE goal waiver is not approved for good faith effort, the bid from the contractor gets rejected and the next lowest bid gets selected.

4b.1 The Maryland Department of Education (MSDE)/Interagency Commission on School Construction (IAC) submission checklist includes a list of requirements that must be met in order for a contract to be approved by the MSDE and the IAC. These requirements include MSDE school facilities board (SFB) and state superintendent approval, an IAC contract approval checklist, as well as Minority Business Enterprise (MBE) forms for projects over $50,000.

4b.2 The Construction Accountant obtains the IAC meeting minutes online and reviews them to determine whether a contract was approved by the IAC. FCPS stated that they have never been denied by the IAC; the IAC typically will just request more information from FCPS if they cannot approve a contract when they receive the documentation and checklist.

Frederick County Public Schools
Capital Projects and School Construction

Notes Continued

5a.1 Within 12 months of occupancy of new school, major school renovation or addition, a project analysis is accomplished to ascertain where materials and/or procedures can be improved and costs reduced to the benefit of future projects. The team consists of the construction manager and/or general contractor, the architect's representative, Board of Education staff including the following: Director of Construction Management and associated staff, The Facilities Planner, Director of Maintenance and Operations, The Instructional Director and associated staff, Purchasing Department representative, Finance Department representative, Food Service Department representative (If appropriate.). An Interagency Committee for School Construction (IAC) representative is invited to attend all meetings. The State of Maryland has a group labeled the IAC, who was codified as a commission and manage the State's school construction process.

5a.2 Within twelve months of occupancy of a new school, major school renovation or additions, a debriefing session is held to evaluate the functional value of the building as it relates to the original educational specifications. The original educational specification is reviewed and recommendations for any revisions to the educational specifications made. An IAC representative is invited to attend all meetings. Costs of major changes to educational specifications is summarized and the benefits assessed against these costs.

5a.3 FCPS defines a change order as modifications to construction or design contracts that impact the cost of a Frederick County Public Schools (FCPS) building project. Change orders result from major changes which can be either unforeseen circumstances, owner-directed changes, or design errors and omissions (i.e. design team's drawings are missing details). A Proposed Change Order (PCO) is the initial request for a change order.

5a.4 Meeting minutes are forwarded to all present for suggested implementation on the next construction project. These minutes and recommendations are also forwarded to the FCPS Chief Operating Officer, Executive Director of Facilities Services, Executive Director of School Administration and Leadership and the Executive Director of Fiscal Services.

5a.5 AIA stands for American Institute of Architects. An AIA contract is a contract that is made with the Construction Manager, the architect, and the contractor, and the contract is a Prime Contractor Contract for most major projects. There must be an architect involved in order for there to be an AIA contract.

5a.6 Each month, the Construction Accountant prepares a Monthly Construction Report that has every active project included. It monitors funding, budget, encumbrances, change orders and expenditures. The Construction Department (including the Supervisor of Facilities Planning and the Construction Accountant) meet each month to discuss the projects in greater detail. Quarterly reports are also prepared and shared with the Board of Education and Frederick County Government to provide project updates. The Construction Accountant prepares the monthly construction report, which is reviewed in monthly construction fund meetings FCPS has internally, but the report is not shared with the Frederick County BOE or other entities; monthly reports are only used internally. The Construction Accountant also handles the State submissions for reimbursements and closeout.

5a.7 The Construction Accountant prepares the quarterly reports for the first, second, and third quarters. FCPS does not prepare a quarterly report at year end. The COO, Director of Capital Programs, and Financial Reporting Manager review the report before the Construction Accountant sends it to the CFO to add to the next Board meeting's agenda. After presentation to the Frederick County Board of Education (BOE), the Construction Accountant forwards the report over to Frederick County Government (FCG).

5a1.1 The Executive Secretary for Construction monitors the MBE reporting and the receipt of bonds, consent of surety, and other closeout documentation.

5b.1 FCPS defines a change order as modifications to construction or design contracts that impact the cost of a Frederick County Public Schools (FCPS) building project. Change orders result from major changes which can be either unforeseen circumstances, owner-directed changes, or design errors and omissions (i.e. design team's drawings are missing details). A Proposed Change Order (PCO) is the initial request for a change order.

5b.2 FCPS staff, the contractor, the design consultant, or the construction manager (CM) may request a PCO to be completed by the CM in response to design or code-related issues or field conditions specific to the project. The FCPS Operations Division, Capital Programs Department, processes and administers a PCO as required by contract documents, FCPS regulations, State Public School Construction Department regulations and Capital Programs Department procedures. The CM assigns every PCO a unique number for tracking purposes.

5b.3 A PCO must be submitted to FCPS in an acceptable format and must include the following information:
1. A specific and detailed description of the nature and cause of the claim.
2. A specific reference to the changes in scope of work that is requested.
3. An estimate of the amount of the increase or decrease in cost to FCPS.
4. Supporting documentation consistent with that required by The American Institute of Architects (AIA) contracts utilized by the FCPS Capital Programs Department for approved projects.

5b.4 The PCO request document and the letters of approval are all saved on the internal server FCPS has. Each letter of approval is printed out and signed by hand before the PCO request document and letter of approval is sent to the next person to review and approve. The physical documents are sent by hand to the next person to review and approve until the Assistant Purchasing Manager obtains all of the approvals and then she uploads the paper documents onto the internal server after verifying all the paperwork is complete and has the necessary approvals. Once the PCO receives all the necessary approvals, then it becomes a change order.

5b.5 The CM sends out PCOs to vendors and gives them a certain number of days to review it and make sure they agree with it. The number of days is dictated by the contract. Once the vendor agrees with the PCO, the CM approves it after making sure the price is correct and then sends it to the architect for their review.

5b.6 A letter of approval for each level of review must be attached to every PCO before it goes to the Director of Capital Programs and Chief Operating Officer for their approval.

5b.7 If the PCO is not approved, it goes back to the CM and the CM gets in touch with the vendor stating the reason why it was not approved. The CM sends an email saying FCPS does not agree with the cost or does not believe the PCO was a legitimate change order. Further, when the PCO gets approved the vendor is also communicated by email and FCPS' Construction Department is notified.

5b.8 The architect reviews the PCO to ensure the price is correct, and verifies that there is no way the vendor can say the proposed change was in the scope of work listed in their original contract.

5b.9 Major school construction projects are operated through one of two senior project managers or a project manager. Either one of the senior project managers or a project manager are in charge of a project, and they are the person to perform this review and approval.

5b.10 FCPS has a standard of care that states that change orders are to be within 1-2% of construction costs. If there is a complicated change order exceeding this standard, then the Director may meet with the vendor and the CM to make sure they are all on the same page. The change order can be an additional construction cost that was not predicted (i.e. need to blast through rocks, where blasting was not listed as a cost in the original contract).

5b.11 A PCO that involves expenditures up to $100,000 is required to be approved by the PM or Senior PM, the Director of Capital Programs, and the Chief Operating Officer before the change is implemented.

5b.12 The Project Manager monitors the work being performed in major school construction projects and ensures that it all aligns with the contract.

Notes Continued

5c.1 A PCO that involves expenditures above $100,000 and up to $200,000 must be approved by the PM or Senior PM, the Director of Capital Programs, the Chief Operating Officer, and the Superintendent before the change is implemented.

5c.2 The PCO request document and the letters of approval are all saved on the internal server FCPS has. Each letter of approval is printed out and signed by hand before the PCO request document and letter of approval is sent to the next person to review and approve. The physical documents are sent by hand to the next person to review and approve until the Assistant Purchasing Manager obtains all of the approvals and then she uploads the paper documents onto the internal server after verifying all the paperwork is complete and has the necessary approvals. Once the PCO receives all the necessary approvals, then it becomes a change order.

5c.3 A change order in excess of $200,000 approved by the Superintendent must be reported with supporting information to the Board of Education at its next regular meeting. The supporting information includes the change order request form as well as all of the letters of approval from the PM or Senior PM, and the Superintendent, as well as the signatures of the Director of Capital Programs and the Chief Operating Officer. The Board documents their approval of a change order in the meeting minutes located on the FCPS website.

5c.4 In order to reduce paperwork, multiple unrelated change orders for the same project can be submitted on one contract form. The Board of Education bases approval on the value of the individual change orders and not the sum total of all the change orders listed on the form.

5c.5 The Executive Secretary for Construction sends a copy of the change order with a form via email to the Procurement Card Administrator with details regarding the specific amount to increase the purchase order (PO) by. This form lists the original PO amount, the change order amount, and what the adjusted PO amount will be after the change order is processed. The purchasing department then reviews the change order before increasing the original PO amount. For major projects that receive construction funding over multiple fiscal years which do not have AIA contracts, the purchasing department reviews the request to increase PO values for compliance with the contract prior to increasing PO values.

5c.6 There are other types of contracts (Not AIA) that is based on established hourly rates, and estimated amounts – for example testing and inspection consultants on major construction projects. These contracts are established based on an estimated amount, what FCPS thinks the total hours may be needed for a particular project. Sometimes these contracts exceed the original hours set, because of conditions on the project that may require additional testing and inspections. In these cases FCPS issues change orders to increase PO value, so the consultant can bill for additional hours. In these instances, the Executive Secretary for Construction sends the Director of Capital Programs an email requesting an approval to increase PO amounts. The Director reviews the request, and approves it via email to the Procurement Card Administrator, so the PO amount can be increased. The purchasing department also reviews these changes prior to increasing PO values.

IV. Appendix D: School Construction Work Group Focus Area Response.

SCWG Areas of Focus	Description	Response
Construction Technology	Including reviewing various mechanical and electrical systems design, structural and non-structural wall types, roofing systems and materials, windows, flooring and other architectural elements.	Per inquiry with Adnan Mamoon, Director of Capital Programs, reducing building size is something FCPS strives for on all projects. FCPS has since implemented a prototype design that is used for schools to help with this reduction in building size and identify efficiencies. The prototype school design is subject to change based on specific standards from the state for each school (ex: classrooms need to be able to hold a certain number of students). This school size can also differ based on if the school is housing any recreational programs. For example, some schools can get additional space to house the county's parks and recreation programs in their gymnasium. Some schools can get additional space due to regional academic, special education, or community school needs. Once a project is completed, there is a lessons-learned process where FCPS meets to identify ways to improve efficiency for the next construction. Further, per FCPS: FCPS evaluates design of our buildings, as well as individual building systems on an ongoing basis. We strive to make our buildings more efficient both in terms of size, as well as long term operations and maintenance. For example, in recent years FCPS has switched from traditional 4-ply roofing to single ply roofing with comparable warranty, and maintainability while reducing overall cost.
Delivery Systems	Reviewing various contracting methods used within the State of Maryland and Nationally as well as alternative methods used by the private sector.	FCPS has been adopting various delivery methods to enhance cost-effectiveness and efficiency in school construction. Notably, FCPS recently implemented Construction Management at Risk, a delivery method specifically designed to minimize cost risks associated with change orders. Further, per FCPS: FCPS has been utilizing different project delivery methods over the past four years to mitigate challenges associated with project budget, as well as schedule. In order to minimize risks associated with escalating costs in current volatile market, FCPS has switched to CM at Risk delivery model for replacement school projects. For Oakdale MS Addition, and Thurmont Limited Renovation projects the schedule was also a concern along with the budget constraints. For these projects, FCPS used design-build delivery method to minimize risks and maintain project schedule.
Local, State, and Federal Mandates	Identifying any State and Federal mandates that affect school design and cost and suggest changes in law or regulation to reduce the impacts these mandates have on the cost of school	FCPS has made efforts to address state and federal mandates and codes that impact school construction costs. However, due to personnel changes within FCPS Capital Programs and resource constraints, progress in addressing some of the recommendations by the work group has been slow. It is important to acknowledge that these changes require political leverage and time. Nonetheless, FCPS remains committed to

SCWG Areas of Focus	Description	Response
	construction, however, these suggestions will not be factored into the 8-10% cost reduction goal, which the work group is charged.	exploring opportunities that can contribute to cost savings in school construction. County Internal Audit has also provided FCPS with contacts the County's Legislative team to consider as starting points for discussions and action items. FCPS has also made additional attempts outside of direct State/Federal mandate. For instance, FCPS has tried to waive school construction permitting fees. As of now, there is no resolution for waiving school construction permitting fees, nor are there agreements in place with municipalities to do so. Despite several attempts made by FCPS to implement this, the authority lies within the County's jurisdiction. However, FCPS remains committed to addressing the necessary changes in order to explore more cost-effective ways of building the county's schools. Further, per FCPS: FCPS monitors legislations, and mandates that can impact design and construction costs. FCPS collaborates with IAC, MABE, as well as other LEAs to review proposed legislations that can potentially impact school design, and construction. FCPS provides feedback, and suggested changes through IAC, MABE and other organizations on proposed legislation that may impact school design and construction.