Stantec

Prince George's County
Public Schools
High Point High School

Feasibility Study Cost Update

May 3, 2019

Agenda

Background

2014 Feasibility Study

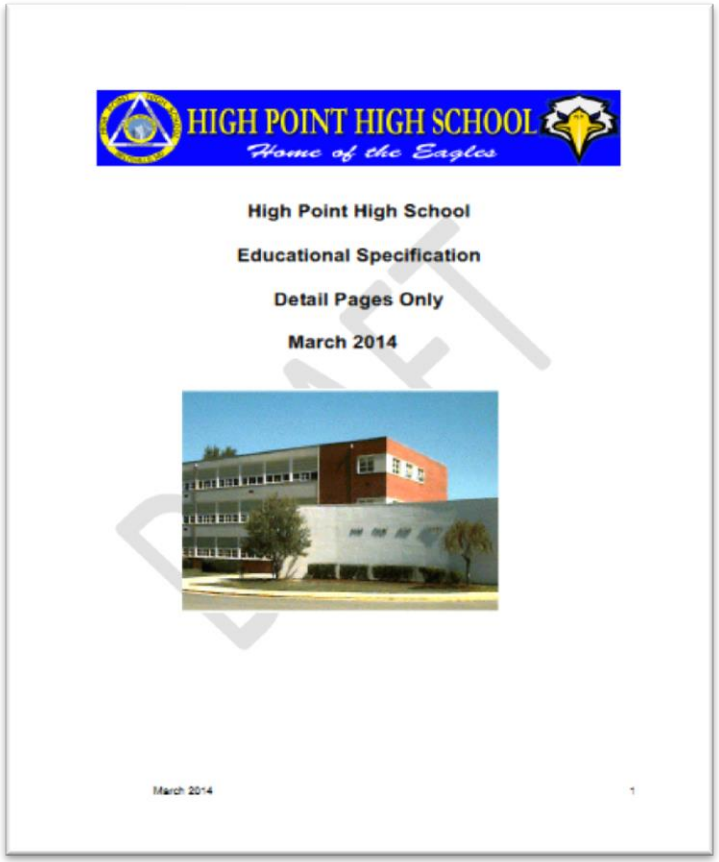
2019 Feasibility Study Cost Update

Strategies for Cost Reduction

Background

Background

PGCPS High School Educational Specifications


HIGH POINT HIGH SCHOOL
Home of the Eagles

High Point High School

Educational Specification

Detail Pages Only

March 2014

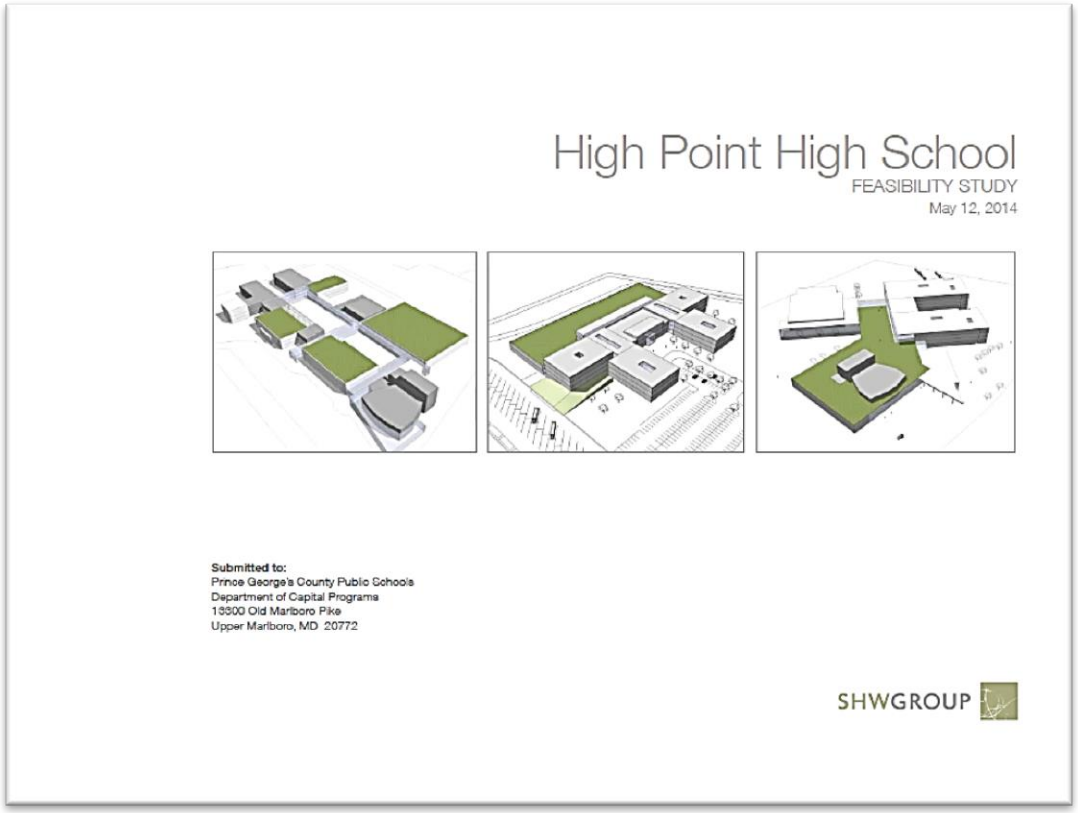
March 2014 1

- 2450 students (incl. 50 Regional Spec. Ed)
- Smaller Learning Campuses / Career Academies
  - Academy of Engineering & Science
  - Academy of Environmental Studies
  - Academy of Homeland Security + Military Science
  - Academy of Hospitality + Tourism (Pro Start only)
- Safety + Security
- Flexibility / Transparency
- Community Connections
- Contemporary Learning Spaces
- Outdoor Learning
- Sustainable Design

2014 Feasibility Study

2014 Study

Scope of Feasibility Study

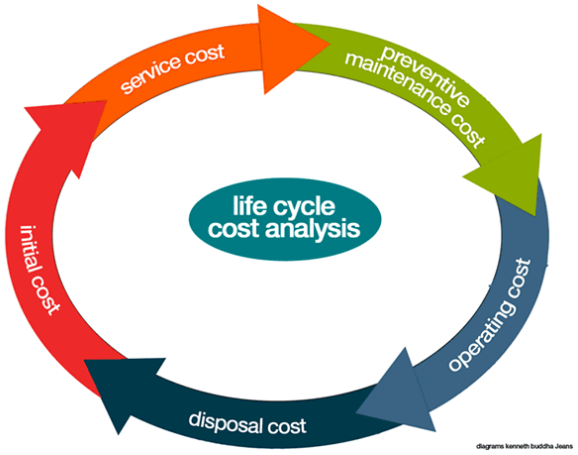


- Consider feasibility and options for implementation of academy model school per the educational specifications
- Perform a comprehensive facility assessment to document existing conditions
- Identify probable construction costs for preferred options

"Consider all options as appropriate to fairly assess the potential of the existing facility. These may include major to minor renovations, major to minor additions, major to minor demolition and new school construction."

2014 Study

Additional Scope



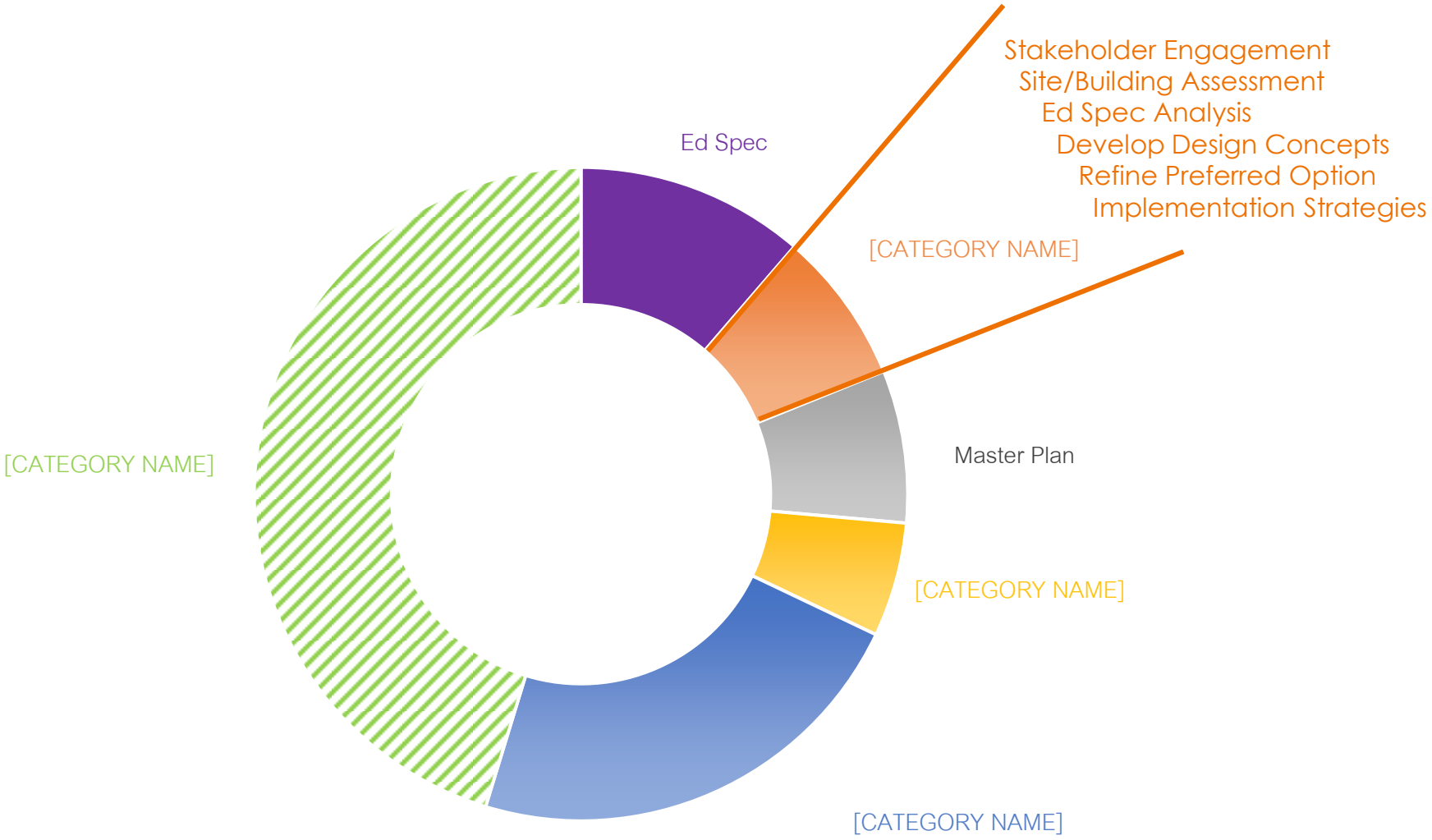
40 Year Life Cycle Cost Analyses

Community and Stakeholder Engagement

Consider Sustainability Strategies

2014 Study

Process



2014 Study

Facility Assessment Findings

Site

Floor Plan Analysis

Exterior

Structural

MEP Systems

Life Safety

2014 Study

Key Findings

Site

- Combined pedestrian + vehicular paths
- Inefficient (sprawling) footprint

Floor Plan Analysis

- Double loaded corridors may not serve academy program
- Accessibility is compromised in certain areas

Exterior

- Uninsulated (single-pane) windows
- Front façade lacks character (blank walls for 2/3 of façade)

Structural

- Fair condition (no sign of structural fatigue)
- Minor cracking and spalling in limited areas

MEP Systems

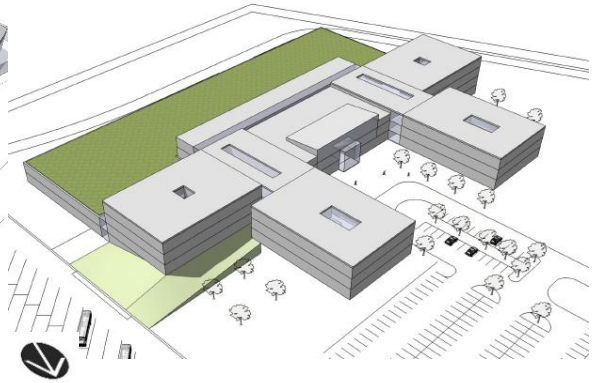
- Mechanical and plumbing systems need replacement
- Aging components may no longer be serviceable

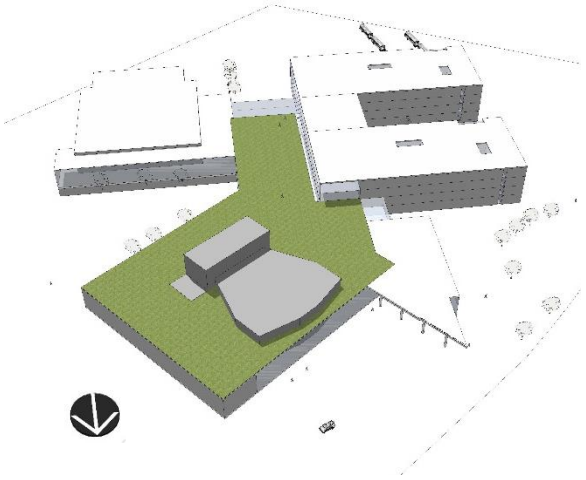
Life Safety

- No building-wide fire suppression system
- Fire alarm system is obsolete

2014 Study

Options





(A) Max Renovation	
Area	402,871SF
Cost	$115,270,000

(B) New Construction	
Area	411,705 SF
Cost	$116,935,122

(C) Partial Reuse	
Area	394,013 SF
Cost	$113,035,602

2014 Study

Opportunities and Challenges

- **Meets Ed Spec except Ball Field**
- **Long Construction – 3.5 to 4 years**
- Preserves 52% of existing building
- Adaptive Re-use very sustainable
- Preserves superior interior materials
- **Preserves Existing Auditorium**
- New Gym/Cafeteria/Media Center
- New Arts Wing
- New Building Exterior
- Accessible Throughout
- Regional Special Ed included

- **Meets Ed Spec**
- **Short Construction – 2 years**
- New Auditorium
- **Separates Bus/Pedestrian Drop-Off**
- Parking Consolidated
- Entry Frontal to Powder Mill Road
- Academic Wings Separate from Entry
- Auditorium at "Heart" of School
- Regional Special Ed included

- **Meets Ed Spec**
- **Short Construction – 2.5 years**
- Preserves Auditorium
- Separates Bus/Pedestrian Drop-Off
- Parking in middle of site
- Entry Frontal to Powder Mill Road
- Strong Site Lines to Rear of Site
- Academic Wings Separate from Entry
- Student Dining at "Heart" of School
- **Optimal Solar Orientation for Classrooms**
- Regional Special Ed at grade and close to bus drop off
- Athletic fields along Powder Mill Road

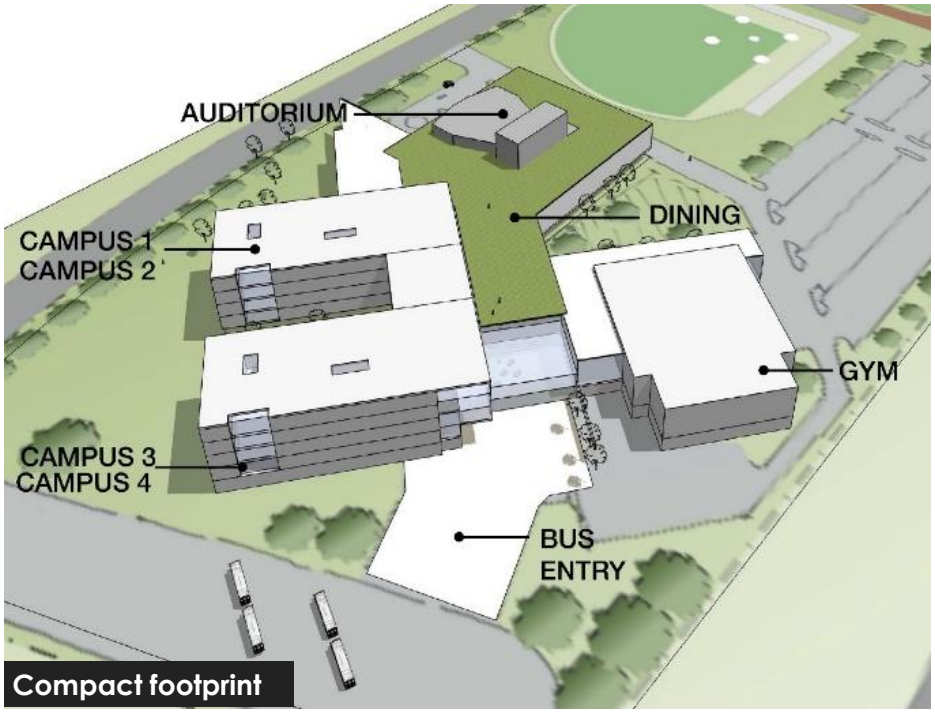
(A) Max Renovation	
Area	402,871 SF
Cost	$115,270,000

(B) New Construction	
Area	411,705 SF
Cost	$116,935,122

(C) Partial Reuse	
Area	394,013 SF
Cost	$113,035,602

2014 Study

Recommendation: Option C



Compact footprint


Site integration


Connected Academies

(A) Max Renovation	
Area	402,871sf
Cost	$115,270,000

(B) New Construction	
Area	411,705 sf
Cost	$116,935,122

(C) Partial Reuse	
Area	394,013 SF
Cost	$113,035,602

2019 Feasibility Study Cost Update

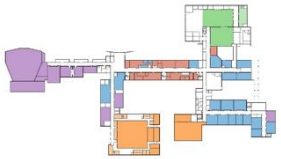
2019 Update

Cost Update Methodology

Review Current Building Conditions

Site

Floor Plan Analysis



Exterior

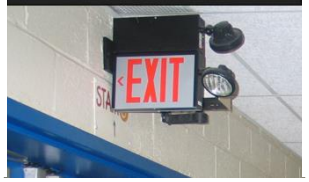
Additional deterioration

Structural

MEP Systems

New Mechanical

Life Safety

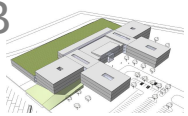


Assumptions

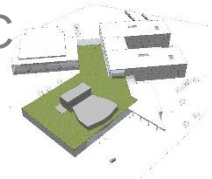
Educational Specifications remain unchanged

A

B



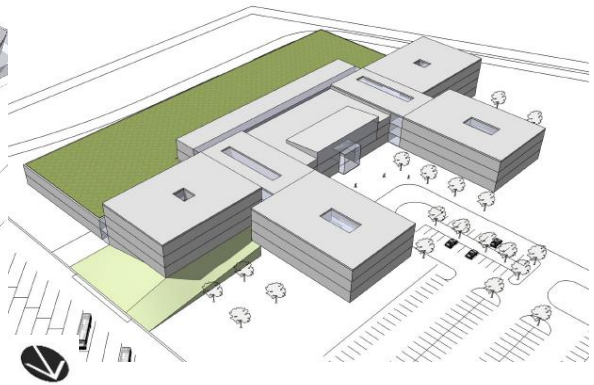
C

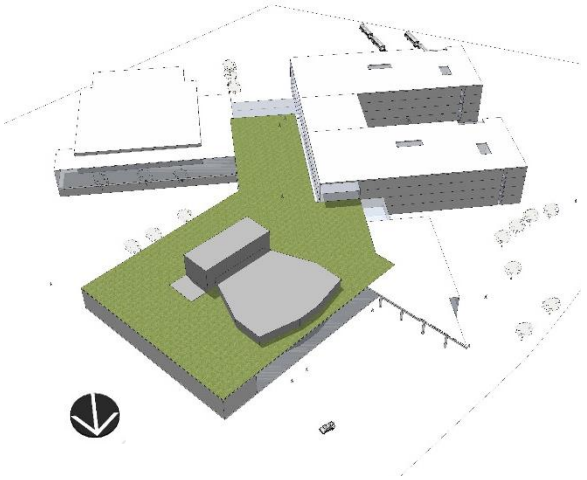


The concepts are the same

2019 Update

2014 ⇨ 2019 Cost Update





(A) Max Renovation	
Area	402,871 SF
2014 Cost	$115,270,000
2019 Cost	**$218,398,008**

(B) New Construction	
Area	411,705 SF
2014 Cost	$116,935,122
2019 Cost	**$215,483,335**

(C) Partial Reuse	
Area	394,013 SF
2014 Cost	$113,035,602
2019 Cost	**$211,956,864**

2019 Update

Why So Much?

Additional Scope

(Not identified in 2014 Cost Estimate)

- $ 1- 4 Million — Hazardous materials abatement
- $ 1.3 Million — Temporary trailers
- $ 2 Million — Special foundations

Increased Costs and Contingencies

- % 15-30 — Increased construction costs by trade
- % 10 — Updated design contingency (previously 5%)
- % 7 — Updated construction contingency (previously no contingency)
- % 16 — Updated escalation (to midpoint of construction @4.75 years)
- % 5 — Updated phasing premium for Option A (previously 3%)

Strategies for Cost Reduction

Factors and Strategies

Time

Build sooner + faster

- Expedite start date
- Eliminate/reduce phasing (Option A)

Scope

Less building, less expensive systems

- Consider alternate mechanical systems
- Reduce square footage

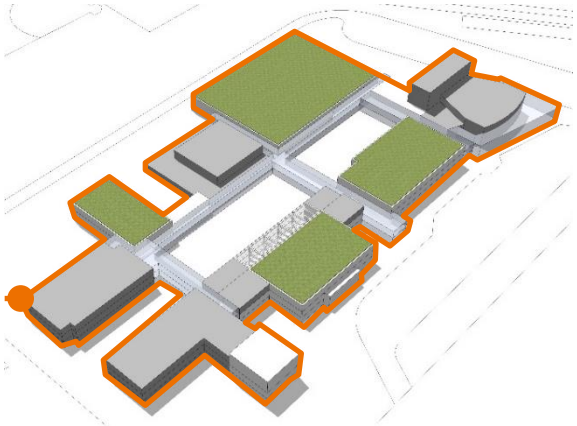
Innovative Practices

Non-traditional methods to reduce time and/or scope

- Prefabricated systems
- Increased utilization rates
- Alternate delivery methods

Strategies for Cost Reduction

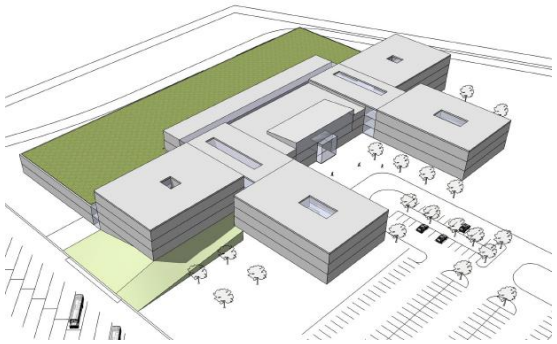
A Fourth Option



(A) Max Renovation

Area 402,871SF
2014 Cost $115,270,000

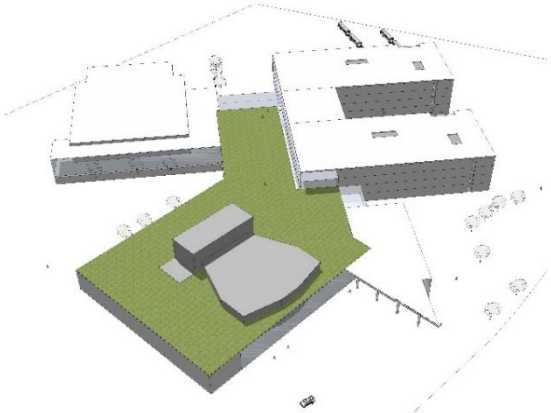
2019 Cost $218,398,008



(B) New Construction

Area 411,705 SF
2014 Cost $116,935,122

2019 Cost $215,483,335



(C) Partial Reuse

Area 394,013 SF
2014 Cost $113,035,602

2019 Cost $211,956,864

(D) Max Unoccupied Renovation

2019 Cost $203,384,642

- Eliminates Construction phasing
- Reduces Time
- Requires Swing Space

THANK YOU

Final Considerations

- The Educational Specifications may need to be updated (capacity, program)
- Additional concepts could be explored (more than four stories)
- Confirm strategic alignment with other district initiatives.

ELECTRONICALLY TRANSMITTED

Board Action Summary

An Outline of the Chief Executive Officer's Recommendation to the Board of Education

New Program: Yes X No ☐ **Modified Program: Yes ☐ No X**

Subject: Approval of High Point High School Feasibility Study

Abstract and Highlights:

That the Board of Education accept the recommendation of the Chief Executive Officer (CEO) and accept the findings in the High Point High School Feasibility Study, prepared by SHW Group. Further, the CEO recommends acceptance of the staff recommendation to replace the entire school with consideration for re-using and renovating the auditorium (Scheme C). The content and format are as requested by the rules, regulations, and procedures of the State of Maryland Interagency Committee on School Construction (IAC)/Public School Construction Program (PSCP), Section 203- Feasibility Studies. A High Point High School Stakeholder Committee participated in the development of three options: (1) major renovation of at least 50% of the school (Scheme A); (2) complete replacement of the school (Scheme B); and, (3) partial re-use of the school (Scheme C). The Committee has reviewed the report and recommends the partial re-use of the building, Scheme C, which includes re-using and renovating the existing auditorium. PGCPS staff concurs with the Committee's recommendation for Scheme C, which will best deliver the educational program defined by the approved educational specifications within the constraints of the budget, timeline, and existing conditions. Acceptance of this recommendation does not constitute a commitment to advance this project ahead of other high schools that are deemed, by having a higher Facility Condition Index (FCI), to have greater need. Rather, the study provides guidance on how to implement a future modernization at High Point High School.

Explanation:

High Point High School was built in 1954 and is located on Powder Mill Road in Beltsville, MD. The existing campus is comprised of two (2) parcels situated on 37.73 acres. There were major and minor additions to the facility in 1957, 1964, 1967, and 1977, for a combined total facility size of 318,376 square feet. The current State Rated Capacity (SRC) for the facility is 2,253. There were science renovations to the building in 1997, 2005, and 2009 as well as several capital improvements and technology upgrades. Capital improvements include new wiring, chiller replacement and some new plumbing fixtures.

In alignment with the State of Maryland IAC/PSCP guidelines, a feasibility study must be carried out whenever replacement of an existing facility is contemplated, as is the case with the existing High Point High School facility. The Feasibility Study has been completed and is submitted for acceptance. Following acceptance, the study will be submitted to the IAC for review and approval of the appropriate modernization strategy.

The Feasibility Study analyzed the existing conditions of the overall facility and building components to determine deficiencies and to provide recommendations for corrective actions including the following options:

- Replacement of the existing facility on the existing site;
- Modernization and addition; and,
- A combination of selective demolition, replacement, and renovation.

All options are delineated in the attached report.

After reviewing the options presented in the Feasibility Study, the High Point High School Feasibility Study Advisory Committee selected Scheme C, partial re-use of the building specifically including the re-use and renovation of the existing auditorium, as the preferred option. PGCPS staff concurs with this recommendation.

The building will be designed for an SRC of 2,450 students including 50 special education regional students. As specified in the proposed educational specifications summary (Appendix I of the Study), the proposed program will include general education courses as well as the three (3) programmed academies and two (2) programs: Academy of Engineering & Science, of Environmental Studies, and of Homeland Security and Military Science as well as the ProStart culinary and Child Development programs. Athletic and other programs will meet PGCPS guidelines and standards.

The CEO recommends that High Point High School be slated for comprehensive modernization as delineated in Option C, in the order in which it is ranked relative to the other comprehensive high schools.

Budget Implications: None at present. Possible implications in a future CIP.

Staffing Implications: None

School(s) Affected: High Point High School

Preparation Date: *May 21, 2013*

Person Preparing: *Sarah Woodhead*

Board Agenda Introduction Date (1st Reader): *June 12, 2014*

Board Action Date: (2nd Reader) *June 26, 2014*

Endorsed: _____
Chief of Supporting Services

Endorsed: _____
Chief Operating Officer

Endorsed: _____
Acting, Chief Financial Officer

Approved: _____
Chief Executive Officer

High Point High School Feasibility Study

Explanation:

High Point High School was built in 1954 and is located on Powder Mill Road in Beltsville, MD. The existing campus is comprised of two (2) parcels situated on 37.73 acres. There were major and minor additions to the facility in 1957, 1964, 1967, and 1977, for a combined total facility size of 318,376 square feet. The current State Rated Capacity (SRC) for the facility is 2,253. There were science renovations to the building in 1997, 2005, and 2009 as well as several capital improvements and technology upgrades. Capital improvements include new wiring, chiller replacement and some new plumbing fixtures.

In alignment with the State of Maryland IAC/PSCP guidelines, a feasibility study must be carried out whenever replacement of an existing facility is contemplated, as is the case with the existing High Point High School facility. The Feasibility Study has been completed and is submitted for acceptance. Following acceptance, the study will be submitted to the IAC for review and approval of the appropriate modernization strategy.

The Feasibility Study analyzed the existing conditions of the overall facility and building components to determine deficiencies and to provide recommendations for corrective actions including the following options:

- Replacement of the existing facility on the existing site;
- Modernization and addition; and,
- A combination of selective demolition, replacement, and renovation.

All options are delineated in the attached report.

After reviewing the options presented in the Feasibility Study, the High Point High School Feasibility Study Advisory Committee selected Scheme C, partial re-use of the building specifically including the re-use and renovation of the existing auditorium, as the preferred option. PGCPS staff concurs with this recommendation.

The building will be designed for an SRC of 2,450 students including 50 special education regional students. As specified in the proposed educational specifications summary (Appendix I of the Study), the proposed program will include general education courses as well as the three (3) programmed academies and two (2) programs: Academy of Engineering & Science, of Environmental Studies, and of Homeland Security and Military Science as well as the ProStart culinary and Child Development programs. Athletic and other programs will meet PGCPS guidelines and standards.

The CEO recommends that High Point High School be slated for comprehensive modernization as delineated in Option C, in the order in which it is ranked relative to the other comprehensive high schools.

PRINCE GEORGE'S COUNTY PUBLIC SCHOOLS
Upper Marlboro, Maryland 20772

RESOLUTION

WHEREAS, The Fiscal Year (FY) 2014 Capital Improvement Plan (CIP) included direction to conduct a Feasibility Study for High Point High School in FY14. PGCPS conducted a feasibility study that included 3 concepts: (1) major renovation of at least 50% of the school (Scheme A); (2) complete replacement of the school (Scheme B); and, (3) partial re-use of the school (Scheme C) and;

WHEREAS, A Feasibility Study is required prior to State funding by the State of Maryland whenever a Local Education Agency (LEA) considers replacement or abandonment of an existing school rather than renovate 50% or more of the building and/or add to it as per Section 203 of the Interagency Committee on School Construction (IAC) Public School Construction Program (PSCP) Administrative Procedures Guide, and;

WHEREAS, On October 8, 2013, staff conducted a Visioning Session for the future renovation or replacement of High Point High School with over 100 members of the community and staff; and

WHEREAS, The High Point High School Feasibility Advisory Committee met from December 2013 through May 2014 and completed the Educational Specifications (Ed Specs) and Feasibility Study; and

WHEREAS, PGCPS has contracted with SHW Group to undertake a detailed analysis of the existing facility and the development of alternative design concepts; and

WHEREAS, At the May 8, 2013 meeting, the High Point High School Feasibility Advisory Committee selected Scheme C, partial re-use of the building specifically including a renovation of the existing auditorium, as the preferred option; and

WHEREAS, Recommended Scheme C, with consideration for re-use of the auditorium, will:

a. Result in a High Point High School that will support the planned Educational Programs for decades to come, in a facility that is energy efficient, sustainable, flexible, and conducive to the proposed STEAM program.
b. Be less disruptive to school operations during the projected 2.5 year construction phase than Scheme A, a major renovation to the building that is projected to take 3.5 to 4 years to construct due to the need to phase renovations while the students occupy the school; and
c. Allow for the consideration of re-using and modernizing the existing large auditorium at High Point High School; and

WHEREAS, The CEO reviewed the study and carefully considered the input from the High Point High School Feasibility Advisory Committee and concurs with Staff's recommendation; and

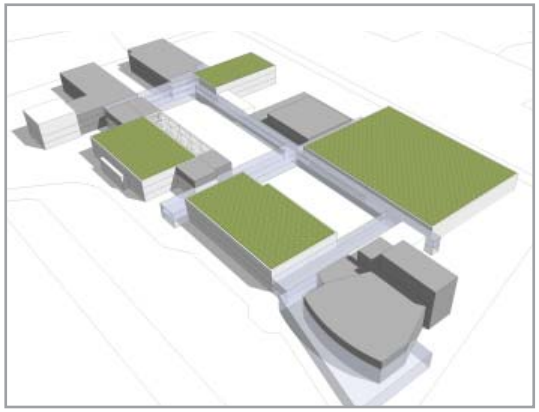
THEREFORE, BE IT RESOLVED, that Scheme C, replacement of the building, with consideration for re-use and renovation of the auditorium, is selected for the future modernization of High Point High School, pending future approval of funding by the Prince George's County Council for planning, design and construction funds in a future Capital Improvements Program.

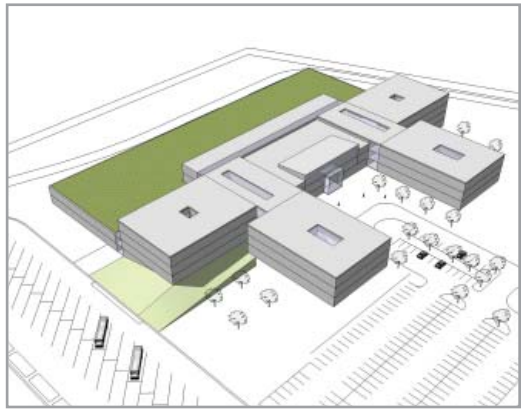
Submitted by:	Ms. Sarah Woodhead
Agenda Date:	June 12, 2014
Discussion:	
First Reader:	June 12, 2014
Second Reader	June 26, 2014
Emergency:	
Amended:	
Deferred:	
Tabled:	
Approved:	

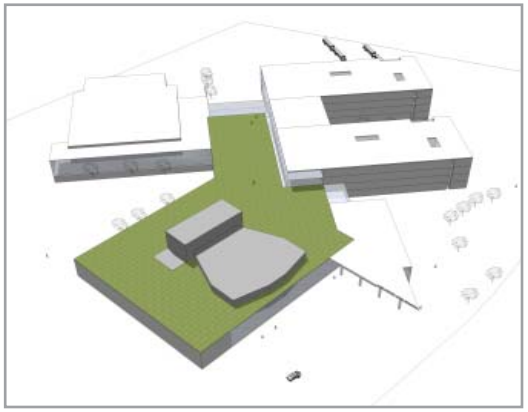
High Point High School

FEASIBILITY STUDY

May 12, 2014







Submitted to:
Prince George's County Public Schools
Department of Capital Programs
13300 Old Marlboro Pike
Upper Marlboro, MD 20772

SHWGROUP

ACKNOWLEDGMENTS

Prince George's County Public Schools Administration

Dr. Kevin M. Maxwell, Chief Executive Officer

Monica Goldson, Chief of Operations Officer

Thomas E. Sheeran, Acting Chief Financial Officer

Clarence Stukes, Chief of Supporting Services

Sarah Woodhead AIA NCARB, Director of Capital Programs

Prince George's County Public Schools Board of Education Members

Dr. Segun C. Eubanks, Ed.D., Board of Education Chair

Carolyn M. Boston , Board of Education Vice-Chair, District 6

Zabrina Epps, M.P.M., District 1

Peggy Higgins, LCSW-C , District 2

Amber Waller , District 3

Patricia Eubanks, District 4

Verjeana M. Jacobs, Esq. , District 5

Lyn J. Mundey, MBA, CIPP/G, District 7

Edward Burroughs III, District 8

Sonya Williams, District 9

Curtis Valentine, M.P.P., Board Member

Dr. Daniel Kaufman, Ph.D., Board Member

Dr. Beverly Anderson, Ph.D., Board Member

Rukayat Muse-Ariyoh, Student Board Member

High Point High School Feasibility Study Planning Committee

Abraham Ajenifuja, Parent Teacher Student Association President

Jamila Ball, Community Partner

Elizabeth Chaisson, Prince George's County Public Schools Capital Programs

Karen Coakley, Beltsville Citizen's Association Representative

William J. Coley, High Point High School Teacher

Brady Cusack, High Point High School Student

Linda Diasgranados, Parent Teacher Student Association Vice President

Barbara A. Frush, House of Delegates, Maryland State House

Sandra Jimenez, High Point High School Principal

Mary Lehman, Prince George's County Council

Gloria Mikolajczyk, RA, School Facilities Architect Supervisor, MD Dept. of Education

Deanna Newman, Educational Specifications Consultant

H. Stevenson Perez, Community Partner

Jim C. Rosapepe, Maryland State Senator, Maryland State Senate

Julie Snyder, High Point High School Teacher

Aisha Vattappara, High Point High School Student

Bridget Warren, Prince George's County Council, Cheif of Staff

Sarah Woodhead AIA NCARB, Director of Capital Programs

ACKNOWLEDGMENTS

Feasibility Study Consultant Team

SHW Group, Architecture and Educational Planning

P.E.L.A. Design, Inc., Landscape Architecture

Adtek engineers, Civil Engineering

ReStl Designers, Inc., Structural Engineering

Global Engineering Solutions LLP, Mechanical and Electrical Engineering

KES Engineering, Inc., Plumbing and Fire Protection Engineering

Nyikos Associates, Inc., Food Service Design

DMS Construction Consulting Services, Inc., Cost Estimating

TABLE OF CONTENTS

page intentionally left blank.

Executive Summary

High Point High School has much in common with many schools across our country today. As a symbol of public investment in an educated citizenry, High Point High School remains the place in which the highest expectations for the children of a diverse and vibrant community are reflected daily. High Point High School represents a proud legacy of service, an ever-present and familiar backdrop to the growth and development that has occurred within its walls and beyond for the past 50 years.

Yet, like similar school facilities elsewhere in the U.S., High Point High School is an aging structure that suffers from energy inefficiency; deterioration of building systems; an institutional interior environment; and the overall inability to adapt to evolving instructional programs and pedagogies. The original structure has been expanded numerous times over the past decades such that the current plan is characterized by an extended and disorienting system of corridors and stairs, most of which are devoid of natural light. Consequently, the school is difficult to supervise as many interior spaces are remote and isolated from the balance. Though an elevator does exist, it does not serve all levels, rendering portions of the school entirely inaccessible.

To ensure its long-term viability and to enhance its role in serving the needs of education today and in the years to come, High Point High School is in need of significant capital improvement. This study was undertaken by SHW Group to develop ideas-based, data-driven options that offer a range of scenarios for this campus, and that capture the tremendous opportunities of facility modernization. For each of the development options considered and presented herein, cost and implementation strategies are included.

This report is intended to provide the Board of Education and district representatives with the information needed to determine with confidence the most appropriate course of action at High Point High School. It is meant to offer sufficient evidence that future development and progress in this community will be mirrored by overall excellence at High Point High School.

Educational Specification

Fundamental to the work of this feasibility study is the development of alternative schemes that reflect both the physical requirements and the underlying spirit of the High Point High School Educational Specification (March 2014). Prepared by Deanne Newman (an educational consultant to Prince George's County Public Schools) in collaboration with members of the Planning Committee, the Educational Specification provides both a quantitative and qualitative framework for re-imagining High Point High School as a STEAM (Science-Technology-Engineering-Arts-Mathematics) –focused school.

The Educational Specification also translates the district's vision for a "career academy" model into a comprehensive listing and description of spaces in which settings for real-world work experiences

complement core academic classrooms and programs. Career Academy requirements at High Point High School are part of a district-wide initiative to involve the school community at-large, especially key business partners, in the educational process and to ensure students are prepared to meet the challenges of successful citizenship in the 21st century.

The Educational Specification also provides for the instructional and operational benefits associated with creating a large school comprised of "Smaller Learning Communities" (SLC). At High Point High School, SLCs are accomplished through a school organizational concept of multiple "campuses," each of which provides space for general instructional space and Career Technology Education (CTE) labs. The spaces within each campus are planned to accommodate fluctuations in the student population and courses offered.

The Educational Specification outlines four campuses, intended to serve the following areas of career-focus:

- *Academy of Engineering and Science*
- *Academy of Environmental Studies*
- *Academy of Homeland Security and Military Science*
- *Hospitality and Tourism (Culinary Arts Program)*

A tabular summary of the specific type, size and quantity of spaces that comprise the complete Educational Specification is included in other sections of this study.

The Educational Specification provides for a State Rated Capacity (SRC) of 2,450 students. It is envisioned this total population will be served by the four campuses discussed above, each designed to accommodate approximately 600 students.

In addition, the Educational Specification includes approximately 15,000 square feet of instructional and support space to serve 50 special needs students. These special needs facilities at High Point High School are part of a district-wide plan to close several specialized schools for severe and profound and/or multi-disabled students, and create smaller clusters at neighborhood schools.

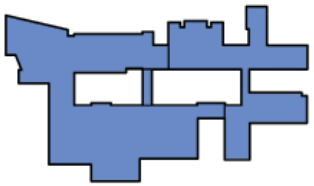
Schemes Considered

For High Point High School to successfully address the requirements of the Educational Specification, the existing facility must undergo a significant transformation. The current structure was built to reflect the past emphasis on a teacher-directed approach to learning. Today--and resulting from the disruption of traditional teaching methods created by a number of forces--the learning process is more fluid, engaging and student-centered. Therefore, a variety of spaces are required to serve individual learning styles and contemporary teaching methods while still accommodating the facility requirements of the instructional program. This is especially true of the STEAM-focused, Career Academy vision for High Point High School outlined in the Educational Specification.

Three schemes described here were developed to honor and further the expectations and requirements of the Educational Specification. Each scheme serves the same 2,450 pupil population, provides four (4) discrete campuses, and incorporates well-established school planning principles, including sustainable design features. Because two of the schemes involve the reuse of existing spaces, some deviation from the

Educational Specification is inherent, and differences are noted where they occur. All schemes presented include comparative cost analyses.

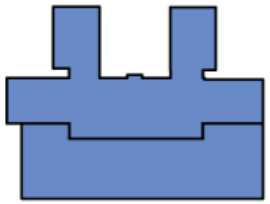
Maximum Reuse of the Existing School



The Maximum Reuse concept builds on the principal of adaptive reuse of the two main existing academic wings in the creation of four new learning campus environments. In each campus a gut renovation and a complete re-envisioning of the building interior layout allow for an open, collaboration inspiring space at its center.

The resulting academic space is comprised of four uniquely designed campuses each responding to the specificity of the existing building configuration. Further this scheme takes full advantage of re-use of the existing Auditorium and new support spaces are encorporated into its volume. New construction then provides contemporary support spaces that best satisfy the Educational Specifications needs for Food Service, Media Center and Physical Education.

Replacement School of the Existing School



The New Construction scheme provides a new building on the existing site. The new building would be built in the area that is largely occupied currently by the football field. After the completion of construction the new school building would be occupied, the original school structure razed and the site developed including the new track and field.

The concept for this approach focuses on the creation of the four fully independent campuses .Two academic wings with two three-story campuses in each flank a central support space zone comprised of a new Auditorium, new arts spaces, new Cafeteria and new PE space in the form of a U shaped building that faces Powder Mill Road. A central recessed entry provides a protected arrival zone at the buildings main entrance for pedestrians and vehicular traffic.

Partial Reuse of Existing School

A hybrid combination of new construction and renovation, partial reuse offers the best of the other two schemes in that the existing Auditorium is preserved and incorporated into a building that is otherwise entirely new. All other aspects of the Educational Specifications are met by the new construction – Cafeteria, Media Center, PE spaces, etc.

Although also a U-shaped building in the new construction scheme campuses are distributed in two towers in which one campus is stacked over another. The stacking of campuses provides flexibility for campus expansion and contraction in the future. Campuses can be easily altered to become three story over one story if needed. Unlike the new construction scheme, the benefit of locating the academic spaces within one wing is that academic spaces are concentrated together and are easily served by central shared academic core spaces.

Recommendations

The three schemes developed for this study represent only a portion of the concepts explored. Those included here were found to best meet project criteria: programmatic needs of the Ed Spec, solving the problems of the current site layout, providing a site and building of appropriate configuration/ character and, last, offer the highest/best use of existing resources.

The max renovation scheme utilizes the best of the existing school while supplementing with new construction to create an inviting, inspiring 21st century learning environment. Parts of the school that remain, academic wings in particular, are transformed with walls removed and a new media center at the heart of the main east-west wing. The resulting academic campuses offer an interesting array of varied spaces with no two campus layouts sharing the same configuration. This variety is the strength of Scheme A. Conversely, although this scheme yields a rich, academic environment the inconvenience of a prolonged, phased construction period makes this scheme less appealing.

The new construction scheme offers the opposite of the construction experience implied with scheme A. The building is constructed from start to finish without interruption. The scheme condenses the building program into a footprint with a more efficient net to gross area ratio and a smaller building envelope. Campuses are separated each into its own tower and circulation is separate to each. Campus identity is strong and collaboration space in the form of a shared atrium between two towers provides common area. The disadvantage in the scheme is that campuses are divided around building's central entry facing Powder Mill Road. This division requires that a portion of shared academic core space be duplicated eliminating the distance between campus and core.

The partial re-use scheme is a hybrid solution in which only the existing auditorium is re-used. Through the course of this study SHW Group received clear feedback from school leadership that the existing auditorium is highly functional and should be retained, if practical. Although scheme C also fronts onto Powder Mill Road the academic configuration for this building is that of a single academic wing containing twin academic towers. This density bring efficiency to the footprint for shared core academic space. Additionally the hybrid scheme offers a dense use of the site, athletic facilities that meet the Ed Spec, a grand central space which offers a lively combination of spaces – media center, cafeteria, etc. and last, a shorter construction period of two years. These components work collectively to create a vibrant and flexible school and, as a result, the Planning Committee has endorsed this hybrid scheme as a highly successful approach for the modernization of High Point High School.

Project Background

The vision and mission of High Point High School is to assist the young people within its diverse community in acquiring the habits, skills, and knowledge that will enable them to become informed, productive members of society. The Feasibility Study team worked closely with Prince George's County Public School Capital Programs project team as well as the High Point High School Planning Committee in order to achieve the optimal results described herein.

Methodology

The work presented on the following pages is the culmination of six meetings with members of the High Point High School Planning Committee, as well as substantial data collection and analysis by the design team.

The committee was comprised of school staff, teachers and students; community representatives; elected officials; PGCPS and county staff; MSDE liaison; and the design team from SHW Group. All meetings were held at the school and were characterized by spirited debate and critical analysis of the information presented. Such rigor proved key to establishing common understanding by all members of the committee, and led directly to the refinement of the schemes presented.

The six meetings held with the Planning Committee occured between the early March and the middle of May 2014 as follows:

- Introduction & Assessment — Thursday, 6 March 2014
- Security & Preliminary Concepts — Thursday, 20 March 2014
- Tour Recap/Preliminary Concepts — Thursday, 3 April 2014
- Refinement of Concepts — Thursday, 24 April 2014
- Preferred Concept — Thursday, 1 May 2014
- Final Recommendations — Thursday, 8 May 2014

The planning process also included visits to three local high schools where much was learned from other school districts' work to create facilities that reflect the imperative of 21st Century Skills. The Committee provided vaulable feedback on the buildings tours. The schools visited were as follows: Yorktown High School APS, Arlington, Virginia; Northpoint High School, CCPS, Waldorf ,Maryland; St. Charles High School, CCPS, Waldorf ,Maryland.The learning environments visited reflected a variety of responses to concerns such as flexibility, technology, student collaboration, community use and school safety. Images, experiences and takeaways by those who attended the facility tours were shared with the entire committee, and preferences were discussed and incorporated into the work of this study. A portion of one committee meeting was led by representatives of the local police department, who shared their expertise on school safety. Principles of safe school planning are taken into account on each of the schemes presented.

In parallel, the study team conducted a comprehensive facility assessment to document existing conditions at High Point High School. Surveys and findings in the form of photographic and narrative illustrations specific to the building' infrastructure and systems, life safety and code compliance, educational adequacy (ability of the existing school to meet the new Educational Specification), site layout and traffic patterns, environmental conditions and other factors that influence future cost, capacity and/or future condition, are presented elsewhere in this report.

In all, this report is the result of the efforts by many people over several months. Its contents have been reviewed and endorsed by the Planning Committee, and reflects its members' overwhelming recommendation of a preferred approach. The Committee's recommendation can be found in the "Recommendation" section of this report.

Overview of Design Schemes

Three schemes are presented here for consideration. Each represents a fully code compliant, accessible design solution containing all new building systems and satisfying the full requirements of the Educational Specifications (with minor deviations as noted). They area identified and described as follows:

- Maximum Renovation (Limited Demolition, Renovation and Additions)
- New Replacement Construction
- Partial Reuse (Substantial Demolition, Renovation and Additions)

		EST. AREA OF DEMOLITION (SQ FT)	EST. AREA OF RENOVATION	EST. AREA OF NEW CONSTRUCTION	TOTAL AREA (GSF)	TOTAL LOT COVERAGE (SQ FT)	TOTAL LOT COVERAGE (%)	NUMBER OF STORIES	PROPOSED # OF PHASES	EST. DURATION OF CONSTRUCTION (MONTHS)	EST. SITE COST	EST. FACILITY COST	EST. TOTAL COST OF CONSTRUCTION	UNIT COST OF CONSTRUCTION	EST. 40-YR. OPERATING COST	TOTAL ANNUAL O&M COST
MAXIMUM REUSE		110,300	203,031	199,840	402,871	607,983	34%	4	5	42	$16,269,744	$98,999,948	$115,269,692	$286.12/GSF	$42,247,360	$499,529
ALL NEW		313,331	0	411,705	411,705	680,005	38%	4	2	24	$16,371,917	$100,563,205	$116,935,122	$284.03/GSF	$40,912,265	$461,045
PARTIAL REUSE		290,648	22,683	371,330	394,013	598,726	33%	5	3	30	$16,955,340	$96,080,262	$113,035,602	$286.88/GSF	$39,228,204	$441,233

Maximum Renovation Scheme

The max renovation scheme encompasses a major reuse and radical renovation of the existing main academic wings - north and south, a renovation of the existing gym and auditorium, and additions for a new entrance, administration, media center, food service, and arts. This scheme requires a carefully planned multi-phased occupied construction method. Green roofs may be added in the scheme to the new gym and cafeteria volumes. All building systems will be replaced.

New Replacement Construction Scheme

The new construction scheme replaces the existing building with a new, three story building located at the western side of the site where the football field is presently located. The position of the new building on the site allows for construction to occur while the existing building is still occupied. The scheme provides a formal-U shaped entrance facing Powder Mill Road. A green roof is included over the larger spaces in the building which are all adjacent to one another - cafeteria, auditrium and PE spaces.

Partial Reuse Scheme

The partial reuse scheme encompasses a renovation of the auditorium only the remainder of the school is new construction. In this scheme the two academic wings are four stories tall with two campuses stacked in each wing. The new construction encompasses the existing auditorium and wraps it with adjacent arts and administration spaces. The media center lies at the heart of the building in a three story atrium space. The main entry level overlooks the dining area on the lower level which meets the grade at the bus drop-off at the southern edge of the site and also to the east side facing the fields where an ampitheater provides outdoor informal space. This strategy will require care but would allow the school to remain in operation during construction. Following occupation of the new school the auditorium would need renovation. It is also possible for the Auditorium to be renovated in tandem with the new construction but the renovation period does represent some time “off-line” for this space. Renovation of the auditorium after move in allows the existing school’s gym to function as temporary assembly space while the auditorium is being renovated.

The table above shows a comparison of all three schemes.

Summary of Educational Specifications

Proposed Educational Program Requirements

The proposed educational program for High Point High School provides for a special curriculum for STEAM/CTE programs that will impact the design of the building. This will be achieved through the creation of academies.

The Technical Academy is a program that provides students with technical skills and knowledge. Benefits to students include: (1) gaining a foundation for a college major in a technical field, (2) having access to a technical career after high school if college is postponed, and (3) having access to a part-time technical job to help with college expenses.

The proposed capacity will be 2450 to serve the projected enrollment in 2022 of 2429. Prince George County Public Schools has recommended an optimal upper limit for high school size of 2600 students. This can be accomodated at High Point High School without any changes to boundaries. It is noted, however, that land for a new school in this area of the county is not available. Therefore, we note that the proposed schemes could be expanded if neccessary.

Actual and Projected Enrollment for High Point High School

School Year	Grade 9	Grade 10	Grade 11	Grade 12	Total
YEAR 2 Sept. 30, 2014	851	487	368	370	2076
YEAR 3 Sept. 30, 2015	824	529	363	323	2039
YEAR 4 Sept. 30, 2016	888	502	390	317	2097
YEAR 5 Sept. 30, 2017	850	570	380	348	2148
YEAR 6 Sept. 30, 2018	917	533	428	335	2213
YEAR 7 Sept. 30, 2019	938	576	396	377	2287
YEAR 10 Sept. 30, 2022	992	624	420	393	2429

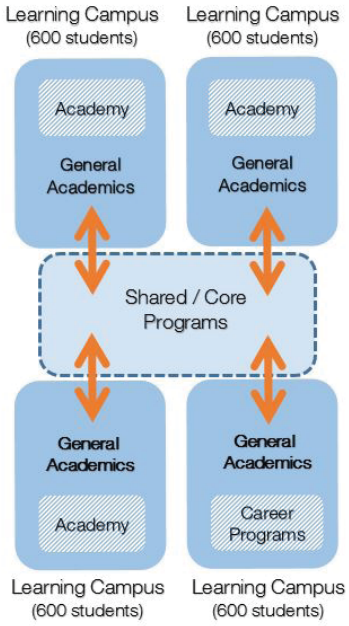
Proposed School Organization

High Point High School is a traditional high school that serves grades 9-12. The new High Point High School will continue to house classrooms for students from 9th through 12th grade, but in smaller learning communities which will include 9th Grade Success, ESOL and Career and Technology Education (CTE) programs.

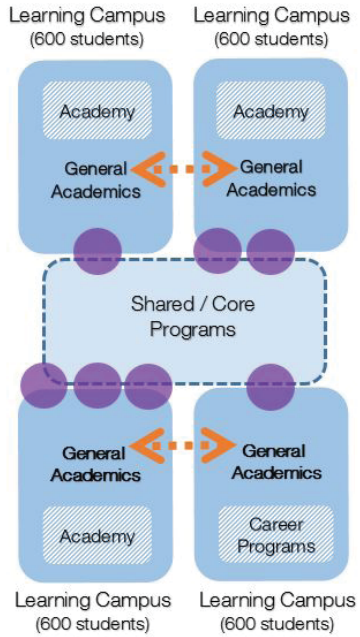
As part of a major reform effort, high schools in Prince George's County are being reorganized into 'Career Academies' to prepare students to meet challenging new standards for successful citizenship in the 21st century. The new organizational structure places the school system's focus on ensuring the well-being and academic achievement of students in a safe school environment, and involving families and the broader community in collaborative partnerships to support the educational process. Career academies are high school programs of study in which a group of students stay together with the same teachers for two or three years. The curriculum organizes instruction in academic subjects around an industry or occupational theme and enables students to fulfill requirements for college entrance in addition to acquiring work-related knowledge and skill. The academies offered within each school will provide a structure by which schools can organize guidance and instruction for students according to their interests and career goals. Each academy offered has been developed to ensure that all students:

- Master high levels of mathematics, science, English, and social studies that are required to meet graduation requirements and to enable them to articulate to any institution or higher education;
- Meet graduation requirements;
- Complete a sequence of elective courses during grades 11 and 12 reflective of the career pathway they have chosen;
- Define the connection between learning and real-world application, and
- Participate in a work-based learning experience consistent with their program of study
-

The district will insure that all academies are offered once in each of 5 regional clusters (4-5 high schools in each). However, not all schools will have all course offerings. The choice of offerings will be based on the school size

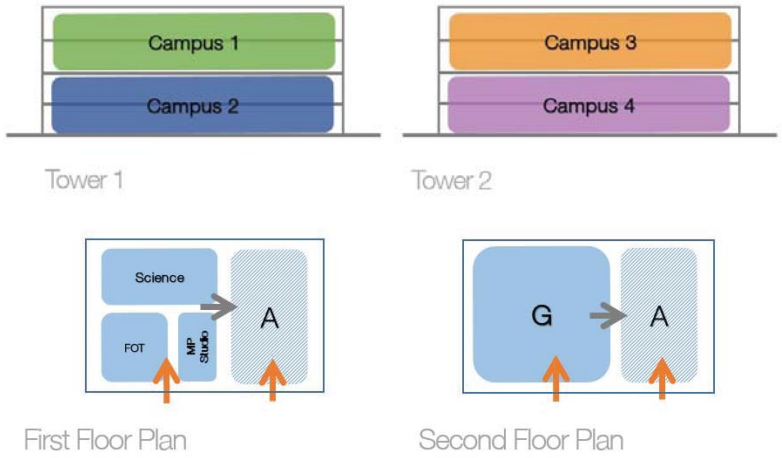


Ed Spec Learning Campus Structure

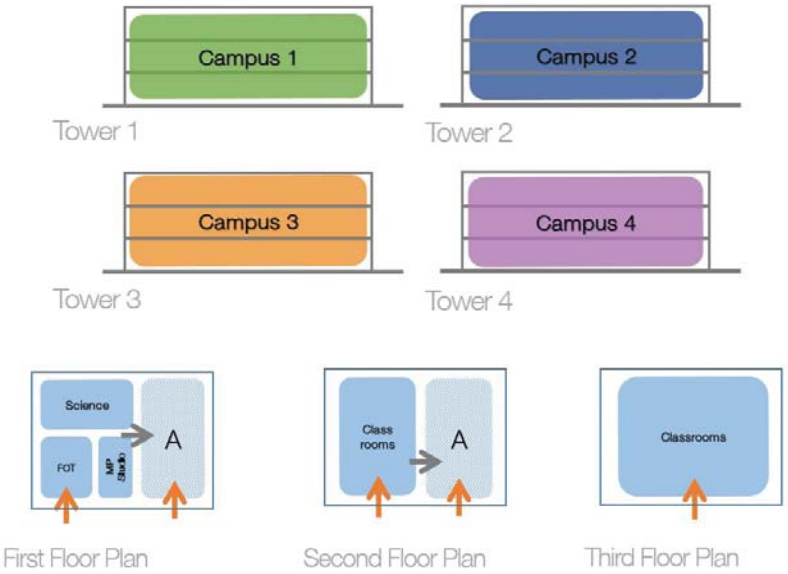


Learning Campus Interaction

Learning Campus Configuration - 2 Towers w/ 2 Campuses in Each



Learning Campus Configuration - 4 Towers w/ 1 Campus in Each



and other programs already offered at that school. The school will also house a Regional Special Education program that serves a larger county area. At High Point High School the Academies are:

- Academy of Engineering & Science
- Academy of Hospitality & Tourism (ProStart only)
- Academy of Environmental Studies
- Academy of Homeland Security and Military Science

Proposed Space Summary

A proposed Educational Specification Space Summary has been provided for each of the schemes in Appendix i.

Proposed Budget and Project Schedule

The proposed budget for the renovation of High Point High school has not been established yet. New construction school projects bid in the previous two year period in the region have fallen within the range of $250/sf to $275/sf. This number is inclusive of general conditions and site development costs but does not include soft costs associated with consultant fees, furnishings, etc. For this project SHW has commissioned DMS Construction Consulting Services to prepare Feasibility Study parametric costs estimates for each of the three schemes that have been developed. These estimates have averaged a cost per square foot number of $285/sf. From this number an abstracted project budget may be developed by multiplying the area costs by the total gross area indicated by the Educational Specification.

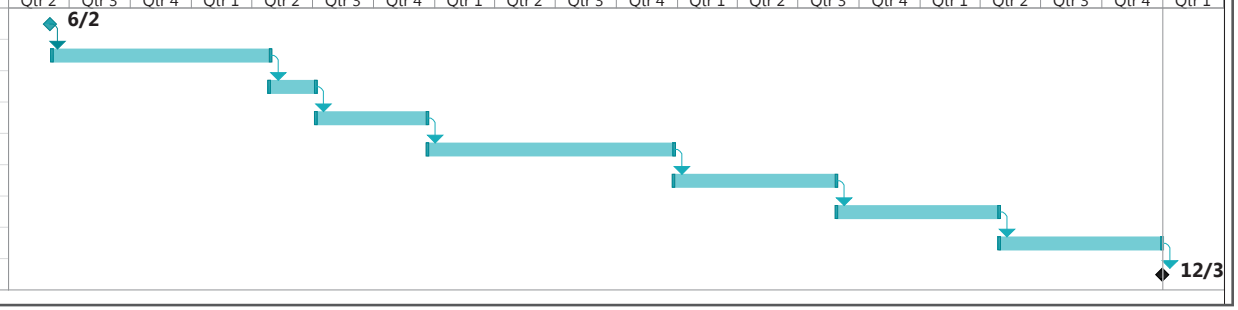
This yields a budget of roughly 103 Million dollars assuming the following:
$285/sf x 395,000 gross square feet = $112,575,000*

*Note - This number includes general conditions, site costs, design contingency of 5% and an escalation to a construction start of July 2016.

The project schedule is difficult to establish with absolute certainty as the project requires formal review, consideration and approval for capital expenditure. For the purposes of this study it has been assumed that construction will start at the close of the school year in July of 2016. Construction schedules for all three schemes provided here can be seen on the following page.

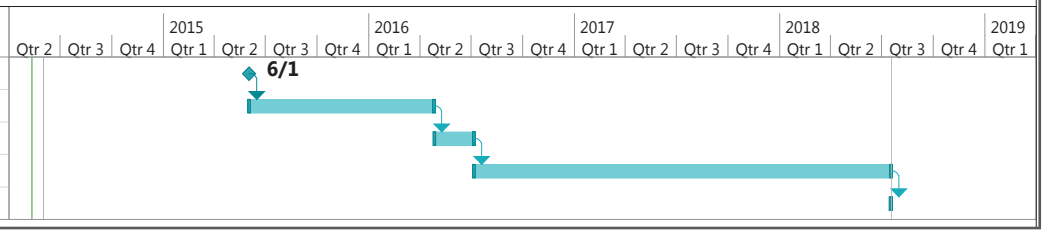
HIGH POINT HIGH SCHOOL FEASIBILITY STUDY — **SCHEME A (MAXIMUM RENOVATION) PROJECT SCHEDULE**

ID	Task Mode	Task Name	Duration
1		PROJECT START	0 days
2		DESIGN	235 days
3		PROCUREMENT	50 days
4		CONSTRUCTION PHASE 1	120 days
5		CONSTRUCTION PHASE 2	265 days
6		CONSTRUCTION PHASE 3	175 days
7		CONSTRUCTION PHASE 4	175 days
8		CONSTRUCTION PHASE 5	175 days
9		PROJECT COMPLETION	0 days



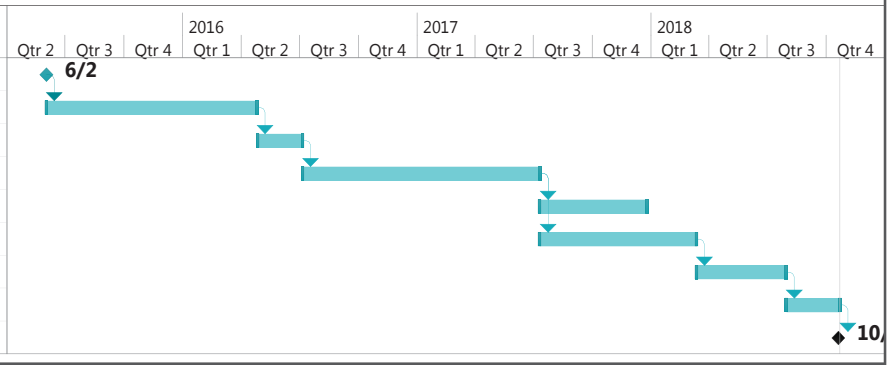
HIGH POINT HIGH SCHOOL FEASIBILITY STUDY — **SCHEME B (NEW REPLACEMENT) PROJECT SCHEDULE**

ID	Task Mode	Task Name	Duration	Start
1		PROJECT START	0 days	Mon 6/1/15
2		DESIGN	235 days	Tue 6/2/15
3		PROCUREMENT	50 days	Wed 4/27/16
4		CONSTRUCTION	530 days	Wed 7/6/16
5		PROJECT COMPLETION	1 day	Tue 7/17/18



HIGH POINT HIGH SCHOOL FEASIBILITY STUDY — **SCHEME C (HYBRID) PROJECT SCHEDULE**

ID	Task Mode	Task Name	Duration	Start
1		PROJECT START	0 days	Tue 6/2/15
2		DESIGN	235 days	Tue 6/2/15
3		PROCUREMENT	50 days	Wed 4/27/16
4		CONSTRUCT NEW BUILDING	265 days	Wed 7/6/16
5		RENOVATE EXISTING AUDITORIUM	120 days	Tue 7/11/17
6		DEMOLISH REMAINDER OF EXISTING BUILDING	175 days	Tue 7/11/17
7		CONSTRUCT AUDITORIUM ENCLOSURE	100 days	Tue 3/13/18
8		CONSTRUCT NEW STADIUM	60 days	Tue 7/31/18
9		PROJECT COMPLETION	0 days	Sat 10/20/18



Existing Conditions

Existing Conditions of the Site Components

General

High Point High School is situated on a 38.8 acre property comprised of two parcels and located at 3601 Powder Mill Road Beltsville, Maryland within Election District 1. The property is found on ADC Map book grid 13-F4 and has tax account numbers 0005165 and 0005173. The site is zoned R-R, but as a school project it is not required to meet zoning restrictions. It is advisable to meet zoning requirements if possible. It is bounded to the north by the Powder Mill Road, to the east by Powder Mill Village Apartments and, to the west and south by single family homes. The existing school is non-compliant with the height above grade maximum.

R-R General Residence District Zoning Requirements	
Maximum Lot Coverage	60% of gross area
Minimum Setbacks:	
• Front Yard	25 feet
• Rear Yard	20 feet
• Side Yard	Total of Both/Min. of either yard 17/8 feet
Maximum Building Height	35 feet

Adjoining Streets, Pedestrian Access, and Vehicular Access

The site access is from Powder Mill Road, where there are four connections to the right-of-way. The southernmost access serves a small parking area and drive aisle that leads to the rear parking area along the stadium. This access is gated and it is unclear when the gate is closed. The second access point heading north on Powder Mill Road is signalized and serves the bus loop, student drop-off loop, and south parking area. The third access is an exit for bus loop. The northernmost access serves the north parking area and north loading area. It is recommended to that pedestrian access to the building from Powder Mill Road be added to be in conformance with current ADA regulations.

View from Powder Mill Rd.

View of Existing Entry and Bus Loop

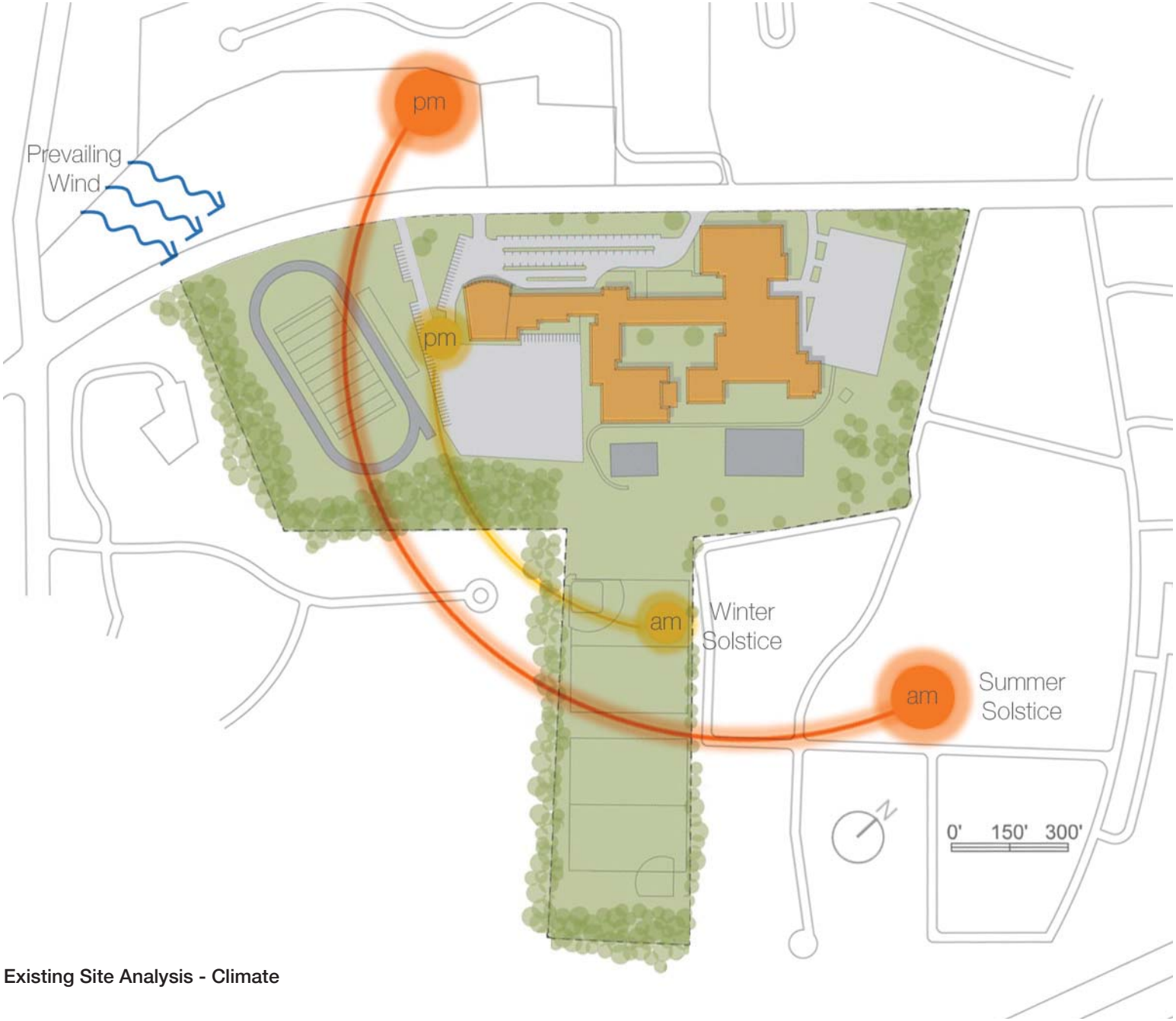
Northwest Arial View of Site

Bus Loop

The bus-loop consists of four drive aisles separated by concrete medians which occupy the north area in front of the building's main entrance. Approximately 450 feet of queuing space is provided. It is unknown if the current configuration is sufficient for the number of buses that service the school. The current configuration appears confusing and it is unclear where buses are to stack. In terms of ADA accessibility, there is one curb ramp located on the sidewalk along the bus-loop near the school's main entrance. It is recommended that a designated passenger loading area be added to be in conformance with current ADA regulations. Currently the number of buses present during arrival and dismissal is 47: 4 CRI buses (21 students/bus) and 43 regular buses - 1 ortho, 1 homeless, 41 regular – (50 students/bus)

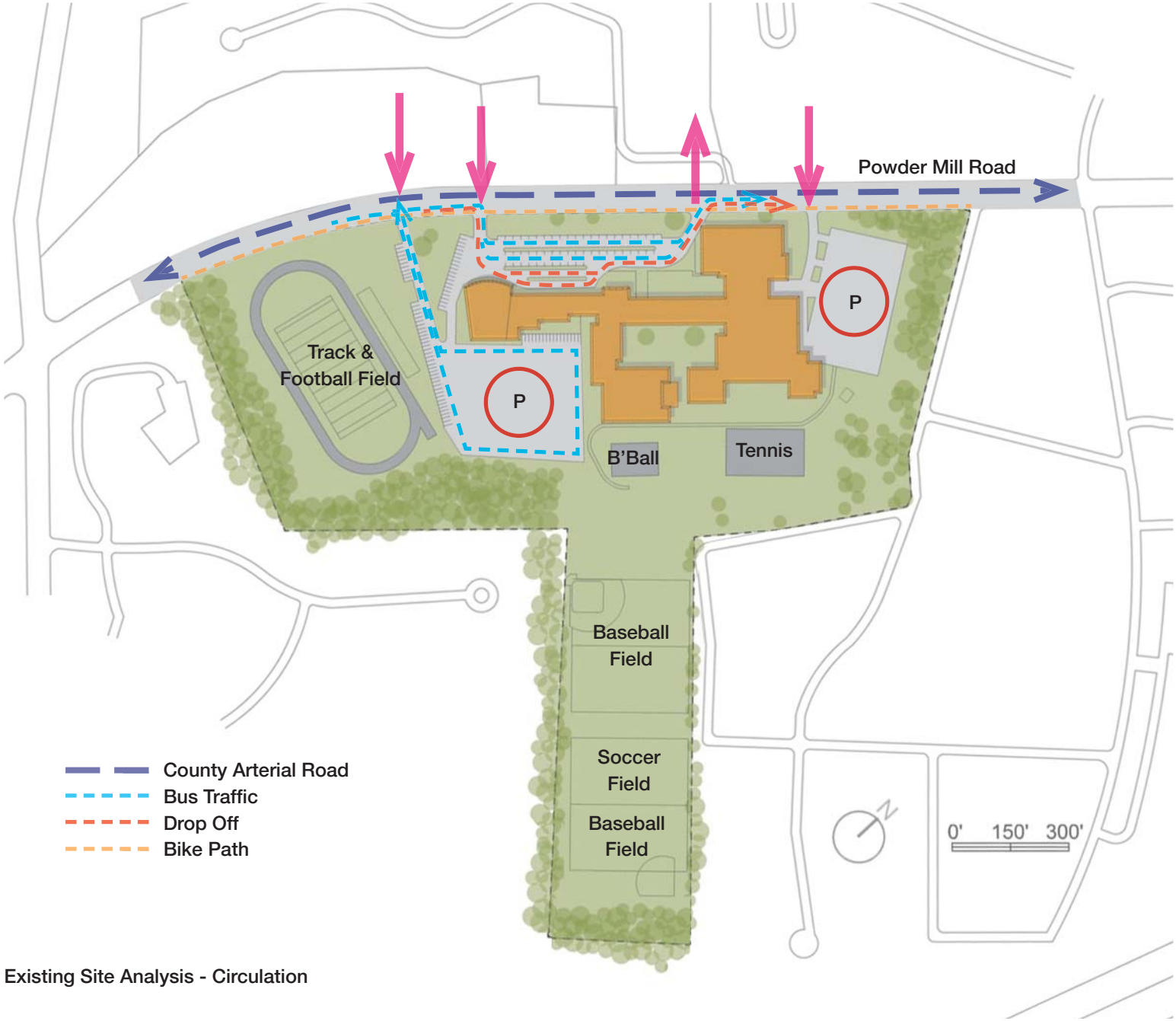
The current student population is 2162 students and the school is being designed to a maximum of 2450 students. This indicates a projected growth of 288 students, 50 of which are anticipated to be CRI students. This means there will be 238 new students riding regular sized buses at a rate of 50

Visitor Parking



Existing Site Analysis - Climate

SHWGROUP



Existing Site Analysis - Circulation

Currently, parking is provided within three parking areas that occupy the east, south, and west portions of the site. The east and south parking areas provide a majority of the site's parking. There are currently 450 spaces, of which 4 are designated as handicap spaces. The quantity of parking spaces provided appears to adequately support the current student and staff needs based on field observation. The west parking area serves as a visitor parking area. This parking area is over 200 feet from the building's main entrance. The visitor paring signs are hard to read and as such, visitors park along the medians along the bus loop during school hours. Current ADA parking areas need to be updated to meet current ADA regulations. Spaces should be dispersed according to the number of parking spaces in each parking area. The surface, curb and gutter of the parking areas is in poor condition.

On-Site Loading

Loading areas are located on the south and east sides of the existing building. The south loading area serves the school's auditorium. The auditorium loading area appears to be inaccessible during the school day as staff parking blocks access and is generally visibly screened from traffic along Powder Mill Road. The east loading area serves the cafeteria. The current configuration appears to be inadequate for backing a truck up to offload and is visible to residents along Powder Mill Road.

Sidewalks

The existing site provides sidewalks from the main building entrance to Powder Mill Road. The existing sidewalk along the Powder Mill Road right-of-way exceeds the maximum cross slope of two percent. New ADA compliant curb ramps have been installed at all site entrances. There are no ADA accessible routes to the portables classrooms. It is recommended that ADA access be provided to at least two thirds of the building entrances and exits and ADA
access be proved to the portables classrooms. The onsite sidewalks appear to be in poor shape and not in compliance with current ADA requirements. Access to the athletic field should be provided to accommodate accessibility required by ADA.

View of Northeast Parking Lot as Approaching School From Eastside

Northeast Parking Lot

Southwest Parking Lot - Staff/Student & Event Parking

Existing Site Analysis - Topography

Fire Access

The existing site layout appears to meet County and State requirements for fire access. All fire exits from the building should provide accessible egress to the public way. A meeting with County Fire and Rescue personnel is suggested in order to determine what fire access improvements will need to occur for any proposed building and site improvements.

Site Topography

The site is relatively flat and appears to drain from the north to the south. The hill that leads from the school to the lower athletic fields has washed out. The athletic fields drain from north to south. A drainage ditch at the bottom of the hill diverts stormwater around the baseball field.

Vegetation

There is a significant number of mature trees along the east and southwest property lines. A Natural Resources Inventory should be prepared in order to determine tree sizes, species, and health. This will also provide a better understanding to how proposed improvements will impact the site trees. Vegetation has overgrown much of the site fencing.

Athletic Fields

The general layout of the athletic fields appears to be functional, although access for staff and spectators is poor. There are no developed access ways or paths to the athletic fields. The basketball courts are in very poor condition. The backboard and asphalt surface should be replaced. The tennis courts are in acceptable condition. The surface and fencing appear to be recently installed.

Stadium

The stadium appears to be in disrepair. The buildings that support the stadium are run down and one has fallen over. The fencing is old and in disrepair. The bleachers are in poor condition. Areas of decking were observed to be sagging and falling away underfoot. The bleachers should be inspected and all safety concerns be addressed. In terms of ADA accessibility, there are no accessible routes to the bleachers or an alternative ADA seating area. The track appears to be in good condition. The football uprights appear old and in disrepair.

Existing Basketball Courts

South Fields

Water and Sewer

The existing building is served by the 12-inch water main that runs along the Powder Mill Road right-of-way. However, no fire flow tests were conducted to determine if sufficient flows and pressures will be provided for the existing building and any improvements. It is recommended that a fire flow test be conducted to determine the pressure on-site. It appears that a WSSC water meter vault was recently installed per WSSC's current standard.

According to WSSC, the site is in a 495A pressure zone with a High Hydraulic Gradient of approximately 525 and a Low Hydraulic Gradient of approximately 428. On that basis, per WSSC prescribed calculations, the water pressure at the existing connection to the water main in Powder Mill Road is approximated to be between 55 p.s.i. and 106 p.s.i. The exact pressures and flows should be confirmed via field testing at the time of design.

Sanitary sewer service exits the building and flows via an unknown size sewer line to the 8" sewer main in Powder Mill Road. Without a more detailed analysis, it is unclear whether or not the proposed building construction can be served by the existing sewer line.

Gas, Electric and Telephone

It appears that all utility service connections run from the Powder Mill Road right-of-way to the building. The existing conditions of these are unknown. Any proposed upgrades to the existing building will require the consultation of a mechanical engineer and electrical engineer.

Storm Drainage and Stormwater Management

There are no existing stormwater management facilities located on the site. It can be anticipated that any site improvements will be required to include Environmental Site Design (ESD) to the maximum extent practicable in order to treat all areas inside the limits of disturbance. If ESD efforts are exhausted and the site has still not been able to reach a hydrologic state of "woods in good condition," then structural practices may be permitted as determined by Prince George's County.

Potential ESD stormwater management practices for the site include both micro-scale practices and alternative surfaces. Micro-scale facilities could include the

Existing Football Field/ Track and Non-Accessible Stands

Existing Tennis Courts

utilization of bio-swales and micro-bioretention facilities where available open space can be found, such as parking lot islands and around the athletic fields. Permeable pavements and infiltration practices are not suitable for hydrologic soil group 'D', however, an alternative surface such as vegetative roofing is a consideration to help achieve ESD.

Flood Plains, Stream Valley Buffers and Non-Tidal Wetlands

Initial investigations reveal that the site is located outside of the mapped floodplain in Zone "C" as shown on FEMA Flood Insurance Rate Map number 2452080015D, furthermore, according to the U.S. Fish and Wildlife Mapping services there are no nationally recognized wetlands located on or around the site.

Geotechnical

The Prince George's County soils map showed that the existing High Point High School site is underlain by Chillum Silt Loam (CbB, CbC and CbE) with Sandy and Clayey Land soils (ScB and ScD) in the southeast portion. Chillum deposits generally consist of well drained soils on uplands of the Coastal Plains. These soils developed in thin silty sandy soil at the surface which is underlain by older deposit of dense sandy and gravelly soils. These types of soils are generally considered to be "good" for foundations.

Our site visit reveals that the building is structurally in "fair" condition without signs of excessive settlement. Existing fill is expected to be present in the athletic field, tennis court and parking lot. However, majority of the building is expected to be founded on Chillum soils. Four soil borings drilled in 1966 for the auditorium addition were available and were used for our study. The borings showed the presence of natural silty sand (SM) with some gravel and clay extending to approximately El 270. N values of 8 to 56 were recorded for the on-site soils, which indicate firm to compact density. The groundwater table was rerecorded at depths of 9 to 11 ft below grade or at El 275 to El 278. Bedrock was not encountered within 20 ft below the surface. The finding of the soil borings generally match with the soils map.

Considering a typical three level school structure, spread footings are generally considered feasible. A soil bearing pressure of 3000 to 5000 psf may be considered for the preliminary design. The relatively high groundwater table may be a problem if a basement is planned.

On-site soils are generally considered "fair to good" for infiltration practice as well as pervious pavement.

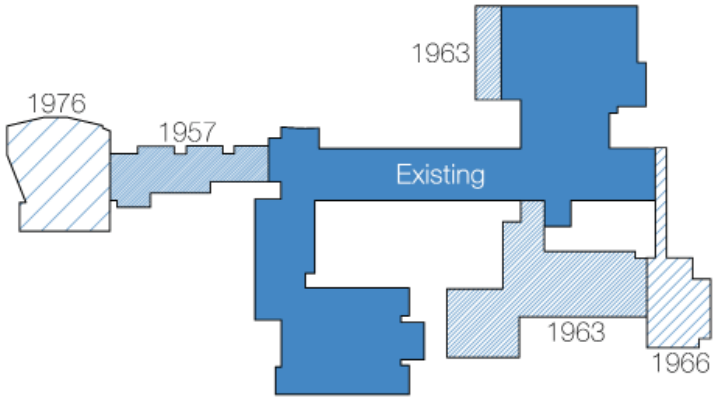
Facility Inventory Data

Current Enrollment and Use

Current enrollment at High Point High School is approximately 2162 students. The school is the most ethnically diverse high school in the state of Maryland and has the largest English Language Learner program of any school in Prince George's County. High Point offers a range of academic programs including a comprehensive program, an Advanced Placement program, an ESOL program and a number of Special Education programs.

Existing Area and Capacity

The High Point High School serves grade 9-12. The building is comprised of various height volumes that have been constructed over the years as student enrollment has grown and academic models have changed. Originally built in 1954 and added onto in 1957, 1964, 1967 and 1977, the area of the building is currently at 318,376 gross square feet. Existing physical State Rated Capacity as established by the IAC is that of 2253 students.



Existing Lower Level Floor Plan

Previous State Funded Projects:

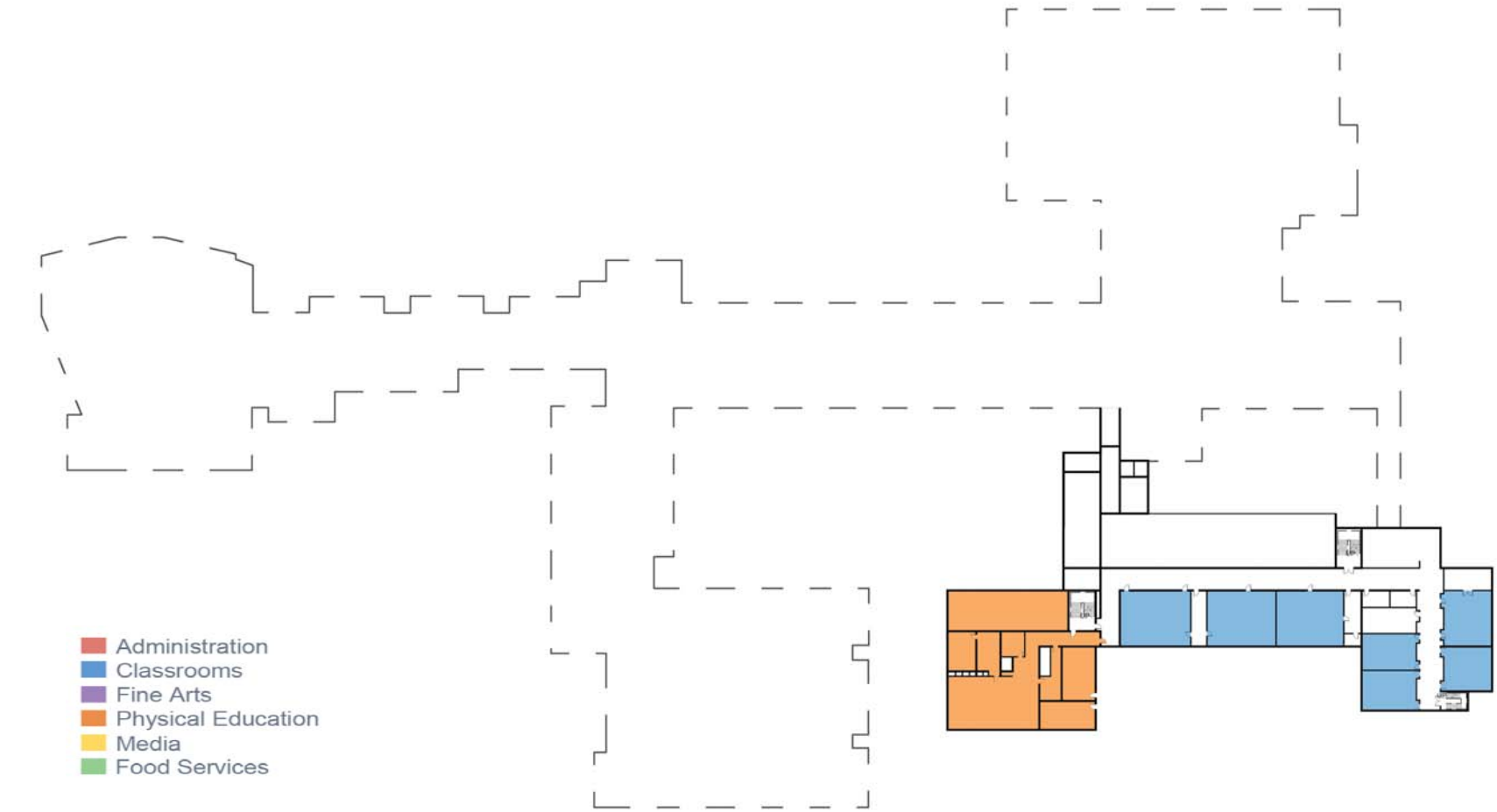
1996 - Construction – Science Renovations	$713,900
2002 - Construction - TIMS	$396,466
2002 - Construction – Science Renovations	$261,000
2003 - Replace 3200 sq ft of stage floor	$ 26,753
2005 - Chiller Replacement	$ 98,920
2007 - FY06 Code upgrade- Walk-in Fridge/Freezer	$ 76,400
2007 - Construction – Science Renovations	$755,398
2008 - ASP Replace plumbing fixtures	$ 50,070

State Funded Projects in Progress:

2012 - Systemic Renovation – Unit Ventilators (UV)	$924,000
2013 - Systemic Renovation – Boiler	$489,000
2013 - Systemic Renovation – Fire Safety	$139,000

Previous Locally Funded Projects:

2007 - Roof Renovation	$ unknown



Existing Ground Floor Plan

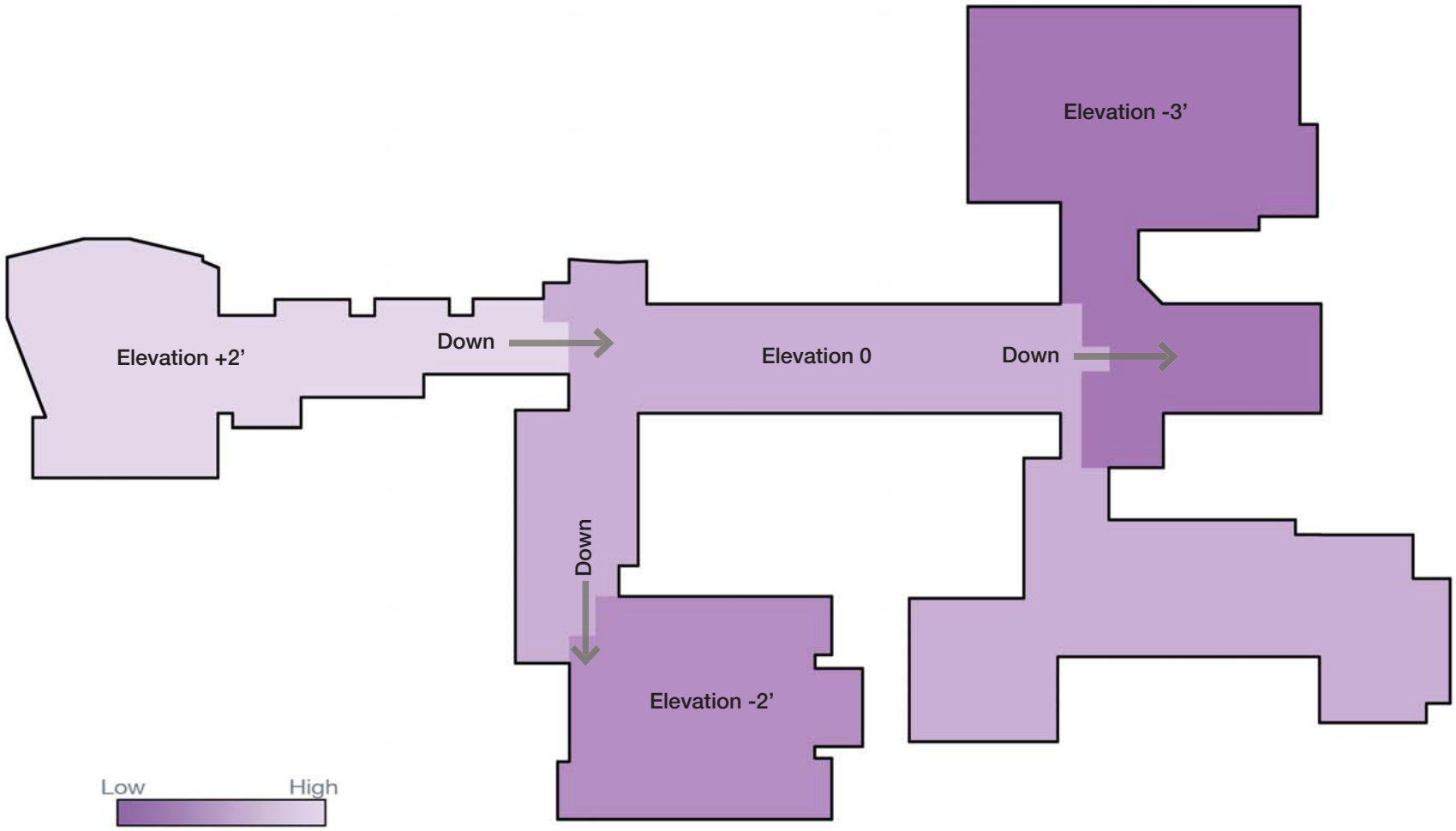
SHWGROUP

Existing First Floor Plan

Existing Second Floor Plan

SHWGROUP

Existing Third Floor Plan



Existing Ground Floor Elevation Changes

SHWGROUP

Existing Conditions of the Building Components

Building Envelope

The building typically rests on slab-on-grade and concrete footings and foundation walls. The building has a walk-out lower level of cast-in-place concrete construction. The superstructure is concrete frame in some locations and protected steel in others (see Building Structure section below for breakdown). Floor construction is slab on grade and metal pan with lightweight concrete fill. Roof construction is metal pan with lightweight concrete fill. The exterior enclosure is comprised of uninsulated walls of brick veneer and stucco over CMU. Exterior windows are steel sash with operable single-pane glazing and are well beyond their useful life. Exterior doors are hollow metal steel. Roofing is typically pitched or low-slope with built-up roof and was found to have been recently replaced and fair condition. Due to the age of the existing exterior wall, its poor insulating value and rapidly deteriorating condition it is best to assume that a full replacement of the exterior envelope would be required in order to improve the building's energy performance.

Existing windows exhibit signficant deterioration

Existing masonry and glass block exterior wall

2nd Story East Side Corrdior Connection - 1963 Addition

Auditorium Entrance

Center Courtyard

Drop-Off Area

Entrance at Gym

Entrance from Southwest Parking Lot

Exit Wall at Vocational

Loading Dock

Southeast Entrance Lobby

Service Entrance

Entrance at Child Care Area

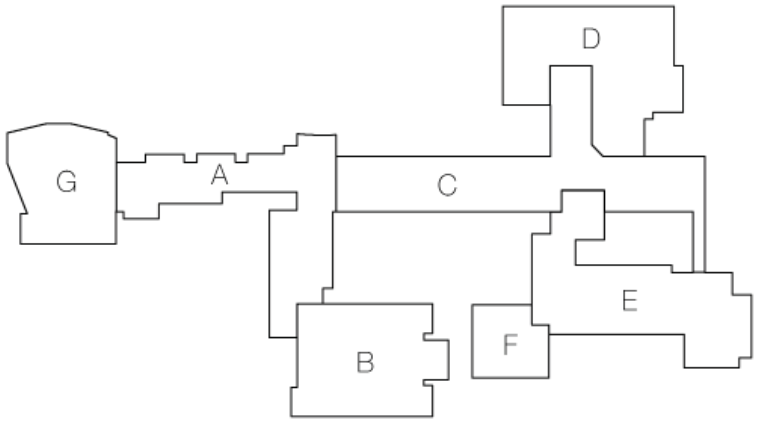
Roof

Building Structure

High Point High School is a three-story, 318,376 square foot facility located on a 38.8-acre site close to I-95 in Beltsville, MD The original building was constructed in 1957,1964, 1967, 1977 with science Renovation (12,785S.F.) performed in 1997, FY02 science CR renovation (1,278 S.F.) performed in 2005. Major System Renovation performed in 2006, FY06 CF steam traps performed in 2006, FY 06 CF – Roof Replacement performed in 2006, and FY07 Science Renovation performed in 2007. The school has four portable /temporary classroom structures. Based on walk-thru observations of the existing facility it is our engineer's opinion that the building's structure is in good condition and is generally sound.

Building A is the original one story building. At the time of survey, all ceiling panels are intact. At the southern part of Building A at the exterior wall with windows, steel posts are exposed. Therefore, we believe the structural system is a steel roof deck supported on steel joist and beam framing structure.

Building B, located south east of Building A, is a gymnasium. It has steel roof deck on steel truss framing in both directions at the center of the building. It also has a one story concrete waffle slab roof at the perimeter of the gymnasium. The entry foyer appears to be steel roof deck over steel framing.



Structural Keyplan

Building C is located to the east side of Building A and is a three story concrete waffle slab structure with concrete beams and columns. Building D is located to the north of Building C. The structure there is a one story steel deck roof over steel joist and beam frame over the kitchen, dining area and media center in the lower perimeter space and a two story high concrete girder and column framing the portion of the cafeteria with the higher roof.

Building E is located to the south of Building C and is a three story building with a basement. It is believed to be steel framing with concrete slab structure.

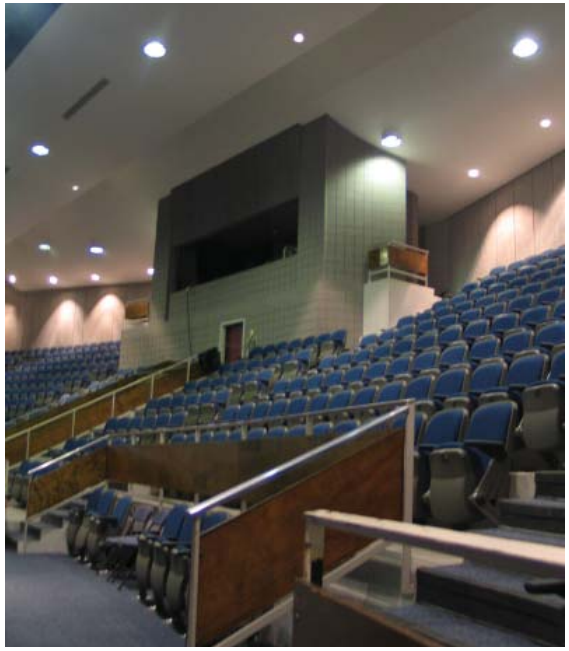
Building F is located at the south–west corner of Building E and is a girl's gym. It has a steel deck over long span steel girders with purlin for supporting the roof deck.

Waffle Slab

Lobby

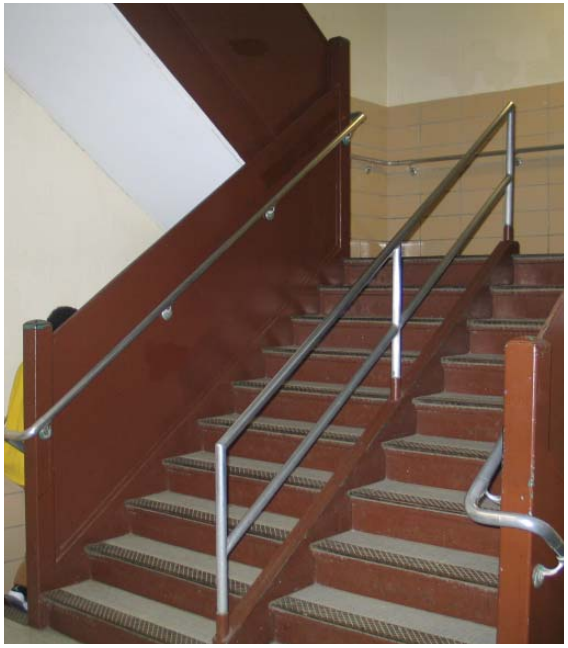
Interior Window, Lobby

Administrative Wing Corridor



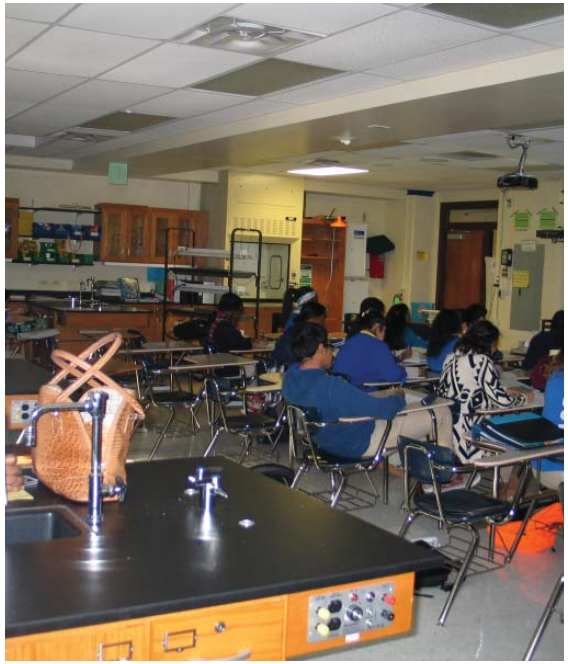
Auditorium

Interior Wall and Floor



Fire Stair

Gym

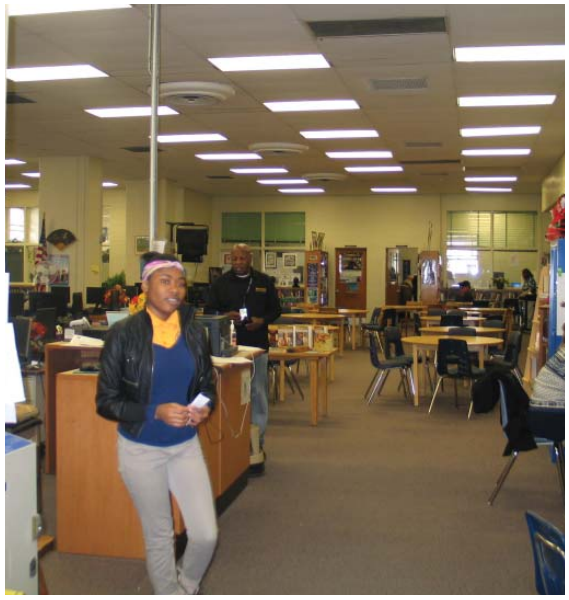


Science Lab

Cafeteria

Original Vocational Center

Classroom



Media Center

Mechanical Systems

Overall, the mechanical systems as a whole, with a few exceptions noted below, are dated and in much need of replacement. The majority of the mechanical equipment is well beyond its life expectancy and some of the equipment is corroded and rusted to the point of inoperability.

The base building system piping is aged and much of the piping insulation contains asbestos though further study by a hazmat expert is required. The majority of the piping is corroded and rusted. The chilled water piping contains a lot of leaks and efforts to repair the problematic sections of the piping system have resulted in more leaks due to the age and condition of the piping. The existing piping cannot be repaired or reused as disturbing the already aged piping will result in additional system failures and leaks.

There are code concerns with the existing mechanical systems. In parts of the building, the corridor is utilized as a return air/relief air path which is no longer compliant with today's codes.

The building relies on infiltration and operable windows as well as unit ventilators and air handling units to provide ventilation to the individual spaces. It is acceptable per current code to provide ventilation air through mechanical means such as the unit ventilators or air handlers. It is also acceptable per current code to provide natural ventilation to the spaces by utilizing operable windows. However, some of the operable windows do not meet the code requirements in order to act as a means of natural ventilation due to not being easily accessible, and infiltration is not an acceptable means of providing ventilation.

The main boiler room houses three (3) Cleaver-Brooks dual-fuel steam boilers. The original boilers were replaced in 1988 and are now 26 years old. The piping and flue within the boiler room appear to have been replaced at the same time that the boilers were replaced. The steam boilers are fed both by natural gas as well as fuel oil. An 8,000 gallon underground storage tank is located within the courtyard adjacent to the boiler room. The fuel oil pump and piping appears to be original.

The three steam boilers provide steam to unit ventilators and steam radiators within the original building (1954) and first addition (1957). The steam boilers also provide steam to a steam-to-hot water converter located in the second mechanical room which was built with the 1964 addition.

Boilers #2 and #3 with piping and flue

Water-Cooled Chiller #1 Mechanical Room

The boilers are controlled via pneumatic controls, and the air compressor appears to have been replaced within the last 10 years. The building does not have a central control system.

The Mechanical Room

The mechanical room is located at the basement level close to the girls' locker room and below the auxiliary gymnasium. The mechanical room was constructed in 1964. The mechanical room contains a water cooled chiller that appears to have been replaced after the original installation of the chiller, but the exact date is not available. However, by observation, it appears to be in poor condition and has lacked maintenance over the years. The water-cooled chiller is served by cooling tower #1 on an adjacent roof.

The mechanical room also houses a steam-to-hot water converter. The converter appears to be original as does the condensate pump, expansion tank, and appurtenances. The converter and all piping and valves are completely corroded and rusted. The entire assembly is in very poor condition.

The dual temperature pumps serve the two-pipe system throughout the school. The pumps appear to be original and are in poor condition.

Penthouse

The penthouse was constructed with the 1967 addition. It houses a second water-cooled chiller and pumps. The water-cooled chiller is served by cooling tower #2 on an adjacent roof. All of the equipment within the penthouse appears to be original and is in very poor condition. Some of the pumps are so corroded that it's unsure if they operate. The piping is insulated with insulation containing asbestos, and all controls are pneumatic.

The Auditorium Mechanical Room

The auditorium mechanical room contains stand-alone systems that serve the auditorium which was built in 1977. A hot water boiler provides hot water to the air handler within the mechanical room. Air-cooled condensers on the roof adjacent to the auditorium provide cooling to the air handler. The pumps have begun to rust and become corroded, and the boiler and air handlers are also in poor condition and beyond their life expectancy as they are original

Steam-to-Hot Water Converter – Corroded Piping and Valves

Dual Temperature Pumps

to the 1977 construction (37 years old). The air-cooled condensing units appear to have been replaced within the last 10 years. The insulation both on the piping and the air handler contain asbestos and some of the insulation is damaged and pulling away from the piping. All of the controls are pneumatic and stand alone. The air compressor supporting the controls is original to the construction though it appears that parts have been replaced as needed. The auditorium mechanical room also houses a small life safety generator. A large louver supplies the required combustion air, and the exhaust is ducted directly to the outdoors.

Cooling Towers

There are two cooling towers each located on a different roof. Cooling tower #1 provides condenser water for water-cooled chiller #1 which is located in the mechanical room beneath the auxiliary gymnasium. Originally the cooling tower was installed in 1964, but the cooling tower was apparently replaced during the summer of 2013 with a cooling tower removed from Indian Queen Elementary School during that school's renovation. It is therefore unclear as to the age of the cooling tower, though maintenance personnel indicate that the current state of the cooling tower, though fair, is better than the previous tower that was replaced last summer. However, the piping to the relocated cooling tower appears to have been replaced during the relocation last summer. Cooling tower #2 serves water-cooled chiller #2. It is located on the southeast corner of the building and was installed in 1967. It appears as though the cooling tower is original, and if not original, in poor condition and past its life expectancy.

Mechanical Systems

Typical Classroom – Original Building and 1957 Addition

Heat is provided to the typical classroom in the original building and the 1957 addition by either a steam radiator which provides only heating or a steam unit ventilator which provides outdoor air in addition to heat. Cooling is provided by window air conditioning units. The radiators and ventilators are well beyond their life expectancy and are in poor condition as most of the units are original to the building construction. The window AC units are in varying conditions with the large majority of the units beyond their life expectancy.

Water-Cooled Chiller #2 - Penthouse

Corroded Base- Mounted Pump

Typical Classroom – Post 1964

Heating and cooling is provided to the typical post-1964 classroom by heating and cooling unit ventilators. The ventilators are a two-pipe ventilator which provides hot water in the winter for heating and chilled water in the summer for cooling. Outside air is also provided through the unit ventilators. Motors and shafts have been repaired as needed to keep the units functional, but the ventilators are well beyond their life expectancy and are in poor condition as most of the units are original to the building construction.

Science Classrooms

The science classrooms throughout the building have undergone renovations over the years with the major renovation occurring in 1997. The science classrooms that were previously not provided with cooling have been outfitted with split systems to provide cooling. The outdoor condensing units are located on the roof and the indoor air handlers above the ceiling of each science classroom. The steam unit ventilators still provide heat. Many of the post-1964 science classrooms were originally provided with fan coil units that provide both heating and cooling, and the systems remain original. The science classrooms have also been provided with exhaust for the exhaust hoods within each room. The age of the fans varies as the science classroom upgrades and renovations occurred in phases.

Rooms, Auxiliary Spaces

Heating and cooling is provided to the support spaces in multiple fashions. There are four (4) main configurations and each space has one of the following configurations:

- Heat: Steam Radiator, Cooling: Window AC, Ventilation: Infiltration/ Operable Windows
- Heat and Ventilation: Steam Unit Ventilator, Cooling: Window AC
- Heating, Cooling, and Ventilation: Two-pipe unit ventilators provided with hot water in the winter and chilled water in the summer
- Heating and Cooling: Two-Pipe Fan Coil Units provided with hot water in the winter and chilled water in the summer, Ventilation: Some rooms rely on infiltration and operable windows for ventilation while others have

Air Handler – Serving the Auditorium

Air-Cooled Condensing Units on Roof Near Auditorium

ducted ventilation connecting to louvers on the exterior façade

Corridors

The corridors are primarily provided with steam ventilators or two-pipe hot water/chilled water ventilators. The ages of the ventilators range due to the numerous building renovations that occurred but most of the ventilators are original, aged and in poor condition as many of the motors and shafts are not in operation. Ventilation, if provided, is provided to the corridors through infiltration or operable windows. Some of the operable windows do not meet the current natural ventilation code requirements as the windows are too high to be easily accessible. Many of the corridors act as return air/relief air paths. This was at one time a common practice, but this approach is no longer code compliant.

Gymnasium

The gymnasium was part of the original building. Heat is provided via steam radiators and cooling via window air conditioning units.

Cafeteria

The main cafeteria was recently provided with a new Trane rooftop unit and new ductwork. The Trane rooftop unit is a stand-alone system that provides heating, DX-cooling, and ventilation. The systems appear to be in good condition and are less than 10 years old.

Auditorium

The auditorium is conditioned by the boiler, air-cooled condensers, and air handlers that are located in the dedicated auditorium mechanical room. These systems are dedicated to serve the auditorium. Ductwork distributes conditioned air to the auditorium from the air handler.

Media Center

The media center is conditioned by a stand-alone rooftop unit that provides heating, DX-cooling and ventilation. It is unclear as to the age of the unit

Life Safety Generator with Louver and Exhaust

Typical Classroom in Post-1964 Buildings – Heating and Cooling Unit Ventilators via hot and chilled water coils

but it appears to be more than 20 years old. The ductwork is run along the roof and serves large drum diffusers within the media center. The exterior ductwork is beginning to deteriorate. The overall system in fair condition and is nearing the end of its life expectancy.

Miscellaneous Roof Equipment

Exhaust throughout the building is provided by numerous exhaust fans interspersed on the roof to serve the various bathrooms as well as provide relief air. The exhaust fans are various ages as some appear to have been replaced over the years and some appear to be original. Some are abandoned in place.

Electrical Systems

Original Electric Service

The original school electric service circa 1953 had 208Y/120 volt service from an underground utility vault located outside, close to the main electrical room. In its 61 years of existence there were several significant changes made to the electric service and distribution to support the school additions/ renovations undertaken along the years. These changes to the electrical distributions as a whole have resulted in many different makes of distribution equipment as well as different means of overcurrent protections from various types of fuses to circuit breakers. Except for GE and Siemens equipment, the rest of the distribution equipment is of unknown manufacturers long gone.

Electrical Upgrade

The last visible upgrade to the electric service was made about 10 years ago. The underground transformer in the underground vault was replaced with a pad mounted utility transformer located a couple of feet from the vault. The upgraded service is at 480Y/277 volt feeding a 2500A main circuit breaker type switchboard which in turn feeds directly major HVAC equipment- chillers and several air conditioning units, sub distribution panel 1 and a 750kVA transformer . The switchboard is housed in a new main electrical room created from what was a storage room, beside the original main electrical room by the exterior wall. C.

Original 208Y120 volt switchboard

Distribution

The sub distribution panel 1 supplies several panelboards including those in Lab 1 and Lab 2. These panelboards in general are supplying lighting branch circuits. Most of these panelboards, although new, unfortunately are not labeled as to its name and the load it serves , contributing to a number of unknowns about the existing building electrical distribution, among other things. Window type AC units which were added around the time the new upgraded service was installed are fed from 480Y/277 volt panels via small step down 208/120 volt transformers.

The 750kVA transformer was part of the electric service upgrade, also. It is located very close to the building on the outside wall of the new main electrical room. The transformer feeds the original 208Y/120 volt fusible type switchboard. The switchboard feeds the rest of the building HVAC

equipment, other than those on the 480/277 volt distribution system. Boilers and associated equipment, sub distribution panel 2, smaller panelboards serving convenience outlets and other 208/120 volts loads except the window type AC units as mentioned above. There is a hand written instruction on the switchboard on how to operate the switchboard as it does not close automatically anymore and shall be manually reset. This condition poses a safety concern. This equipment has passed its service age, if still partly functional, must be being used as a pull box only for most of the feeders in it. Most of the labels on the switchboard and panelboards downstream are not readable and exact loads it feeds are unknown. It will take detailed inspections by qualified electricians to determine the loads connected to it. Replacement switches for this switchboard and those of panels and panelboards no longer exist; therefore, any failed switch cannot be replaced at all so the option will be to re-feed affected feeder from the newer 480Y/277 volt system. In addition, since this was installed way back, the short circuit capacity of the switchboard should have downgraded by time and use over the years and therefore is questionable. When a short

Older panelboard, typically unlabeled

Existing 480Y/277 volt switchboard

Generator in Auditorium for local life safety

Plumbing and Fire Protection Systems

The existing plumbing system generally appears to be in poor condition and does not meet current code requirements or energy performance standards. The sanitary drainage piping is failing and frequently backs up into the building due to blockage in the main lines.

The building does not have a full fire suppression system. Only parts or the administration building and a storage room at the main building are protected by a wet-pipe sprinkler system.

There appear to be two separate water supplies to the facility, based on the different construction phases. The main building has a 5” incoming domestic water service from Powder Mill Road with no water meter or backflow provision inside the building. This water service piping is in poor condition and the insulation appears to contain asbestos.

There appears to be a new connection made to the street main and a new meter vault built in 2013 (Civil to elaborate more on this since it falls in their area of responsibility).

There is also a 4” incoming water service at the administration building from which a 3” sprinkler line is connected and having no water meter or backflow provision inside the building. This water service piping is in good condition.

Incoming Water Service - Main Building

Sanitary Pipes

Domestic hot water is provided at the main building by a large storage type water heater with steam heating coils and a gas-fired water heater with hot water recirculation pump and piping. This heating system is in poor condition and the water storage tank insulation appears to contain asbestos.

Domestic hot water is provided at the administration building by a 50-gallon storage type electric water heater and a 40-gallon storage type electric water heater. Both heaters are in good condition.

Drain, waist and vent piping appears to be a combination of cast iron, galvanized steel, and copper piping. The domestic water piping is a combination of copper and galvanized steel. Roof drains and floor drains are in poor condition.

There is a 4" incoming gas service at the main building boiler room.

Gas Fired Domestic Water Heater

Incoming Water Service - Main Building

Incoming Gas Service

Food Service

High Point High School kitchen contains approximately 3,500 square feet and operates as a full-service prep/production facility equipped to produce and serve meals to 3,300 students and staff. The majority of the equipment is original to the late 1950's building. Much of the equipment, although well-maintained, is old, outdated, inefficient, non-compliant with current codes and has seen its= useful life.

Receiving

A single 3'-0" door with screens. Door is not wide enough to accept palletized merchandise for deliveries.

Dry Storage

Product stored on dunnage racks surrounding perimeter of room. Walls are painted block. Floor is sealed concrete. Poor light level. Due to insufficient space in Janitor's Closet, cleaning supplies are stored alongside dry goods in violation of health codes. Need additional shelving in middle of room.

Walk-in Cooler and Freezer Storage

Located on end of receiving area. Recently replaced in 2006. In good condition with good light levels. Product stored on mobile shelving.

Kitchen

Area is poorly ventilated and extremely hot during warmer months, cold during winter months, adding to worker stress and fatigue. Some items of cooking equipment are not used due to obsolescence or constant breakdowns and lack of parts. Additional cooking equipment needed to properly prepare current menu items. (1) hand washing sink to cover entire kitchen space in violation of health code. Light level well below current code standards of (50) foot candles per square foot. Gas, water and drains lines around cooking area rusting, unsanitary, difficult to properly keep area clean. The original hood is stainless steel with baffle-type filters. Exhaust air-volumes do not conform to current mechanical code. Size of hood not in compliance

Existing Serving Line

Existing Serving Line

with current NFPA 96 standards. Fire Protection System. Does not meet current NFPA UL300 standards.

Serving

Serving area consists of two L-shaped and two straight-line counters. Institutional looking cafeteria counters with provisions for hot and cold items, each with a dedicated cashier. Area is uninviting and extremely plain resulting in an unpleasant dining experience. Hand washing sinks poorly located to meet health code. Area lacks necessary quantity of pass-thru hot and cold cabinets to support serving operation. BCPS uses all-disposable dinnerware. Former dishwashing area has been converted to (2) serving stations offering pre-wrapped hot, cold and snacks.

Cafeteria at Area of Lower Ceiling - Serving Line Cue Visible at Far Side

Existing Steam Side of the Cooking Line-Up

Existing banks of Doubel Stacked Convection Ovens

Other Planning and Design Considerations

Other Planning and Design Considerations

Energy use, including embedded energy and sustainability factors

It can be argued that schools are the ultimate sustainable building type – they house precious cargo; they have a long service life; they are de facto community centers; they perform their primary function during the day when there is free and available light and energy; and they are powerful symbols of our society. In addition, school systems face increasingly stringent budgets and the cost of facilities operations and maintenance often competes for funding with instructional programs, staff salaries, and other needs. Therefore, any major investment in educational facilities requires a careful look at the long-term impacts of the project. A safe, healthy, and high-performing facility will improve academic performance and minimize operations costs. Further, a thoughtful design will function as a teaching tool and help prepare students for a more sustainable future.

In accordance with State and County requirements this project will be required to achieve the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED®) Gold Certification. Further, the State of Maryland is pioneering a program in pursuit of net-zero energy schools and every effort should be made to meet the goals of this program. Following are descriptions of sustainable design strategies beginning with general strategies that apply to all schemes, then focusing on strategies or issues associated with each proposed scheme for Highpoint High School.

Site Design Strategies

The existing site offers many opportunities to illustrate environmental stewardship in ways that maximize the best attributes of the property while improving overall function and aesthetic appeal through:

- Working with existing topography and balancing any required cut and fill.
- Minimizing site disruption and attendant soil erosion and air pollution associated with construction activities.
- Declaring the site a chemical free zone. Eliminate the use of pesticides, herbicides, etc. in order to promote protection of regional watersheds.
- Energy efficient site lighting utilized to maximize security while minimizing wasted light.
- Protecting against prevailing winter winds and undesirable solar gain by landscaping for energy conservation.
- Providing landscaping that promotes wildlife, songbirds, etc.
- Letting portions of the site revert back to its native state. Balance the need of carefully manicured lawn areas with less labor, energy and material intensive natural areas, especially around the boundary of the property.

Integrating Water Efficiency

Frisco High School, Frisco, Texas - Strong Integration of Daylight Into Design

Due to the large roof area of the existing building or a new building (in excess of 200,000 sf) there is the opportunity for the building to be 75%-100% water self-sufficient. This would be a major accomplishment and an equally significant resource benefit over the life cycle of the building. A number of water harvesting and water conservation strategies should be considered. This involves the following:

- Harvest rainwater for non-potable water uses to reduce the reliance on municipally supplied water and the carbon cost of treating that water.
- Maximize water conservation. This is something that has great educational value, and can be made visible to the student body and community:
- Employ low impact development (LID) strategies to manage and conserve storm water on site.
- Consider installing a low profile vegetative roof to reduce the amount and rate of storm water coming from the building roof.
- Use retention and detention facilities as educational tools and illustration of the role of natural ecology in development.

Minimizing Energy Use and Creating Healthful Environments

This building should be designed to be a very energy efficient facility. This will be based on the fundamentals of good solar orientation, building circulation and layout, and optimum building design based on computer analysis of integrated building systems. Sustainable design calls for the building enclosure to be well suited to microclimate and building site, with primary reliance on natural systems. Some strategies to achieve this goal include:

- Computer modeling used to inform the design process and optimize building systems. Annual energy savings and yearly operating cost reduction goal should be a minimum of 30% over an American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2004 compliant building.
- The building should be zoned and controlled in a way specific to occupancy and use profiles. These systems will recognize the mass and building characteristics of the building as well as control logic designed to maximize the return on investing in these systems.
- All building system components selected will be free of chlorofluorocarbons (CFCs) and hydro chlorofluorocarbons (HCFCs).
- Daylighting should be a major design driver, along with intelligent controls of electric lighting that recognize the amount of useful daylight present in each space.
- Natural ventilation should be used where possible.
- Mechanical ventilation should be decoupled from space conditioning to ensure fresh air and energy recovery independent of space conditioning requirements.
- Certain spaces such as the cafeteria and auditorium will be analyzed and scrutinized for energy and building system application specific to their occupancy and use.
- The project should incorporate full enhanced building system commissioning to insure that the design intent will be met.

College Satation High School, College Station, Texas - South Facade Sunshades

Conserving Materials and Resources

The presence of the existing building and associated vehicular and pedestrian circulation ways present both challenges and opportunities to compose a design which is energy, material and resource efficient. A potential solution that would tend to maximize resource efficiency and building performance would be to combine the partial deconstruction of select areas of the existing facility, with the reuse of existing portions of the remaining school facility and new construction. The sustainable design and development issues to consider include:

- Recycling as much of the deconstructed building as possible. The intent is to keep construction debris out of landfills by using it on site or routing salvaged materials to other projects in the area.
- Reuse as much of the existing building as practical. The portion of the existing building selected to be reused should be brought up to the highest standards of sustainable design possible given existing conditions.
- Provide space for the collection, storage and redistribution of recycled materials. This effort will be aided by an increased awareness of the waste stream of the school and how a larger part of the waste stream can be salvaged.
- Using materials and labor available in the region (< 250 miles), and with a high recycled or post-consumer material content.

Indoor Environmental Quality (IEQ)

Sustainable design places a premium on the health, comfort and safety of building occupants. This is particularly critical with respect to school children and others who do not have the choice or ability to modify or change their daily environment. Interior Environmental Quality issues incorporated in the design and construction of this building should include:

- A smoke free school zone.
- Using caution during construction to safeguard building occupants. The goal is to not subject anyone to the potentially harmful effects of construction debris, pollution and activities.
- Selecting materials that do not off-gas harmful vapors or otherwise contribute to interior air pollution.
- Adopting an allergy free, non-toxic cleaning and maintenance regimen using only environmentally friendly products and practices.
- Recognizing the importance of adequate fresh air, natural ventilation and the ability to conveniently use outdoor spaces as effective instruction areas.
- Incorporating walk off mats, entrance grates and other design features that limit the amount of contaminants tracked in from outdoors.
- Carbon dioxide (CO2) monitors that inform the building controls to insure adequate amounts of ventilation where and when needed.
- Effective use of natural light complimented by well-designed electric lighting.
- Using color, texture and pattern to create effective learning environments.
- A mold free environment.
- Sustainable design places a premium on the health, comfort and safetof building occupants. This is particularly critical with respect to school children and others who do not have the choice or ability to modify or change their daily environment. Interior Environmental Quality issues i

The School as a Teaching Tool

The school building itself must be designed as an extension of the curriculum. The design must provide ways to make various building systems and design features promote and enhance the learning of how building occupants, the natural world, and the built environment interact.

The following pages include LEED scorecards for each of the schemes that have been studied and developed. Each represents multiple sustainable site and building strategies.

LEED Scorecard - Maximum Renovation

LEED 2009 for Schools
Project Scorecard

SHWGROUP

Project Name: Highpoint High School - Maximum Renovation
Project Address: 3601 Powder Mill Rd, Beltsville, MD 20705

Yes	?	?	No						
9	1	9	5	**SUSTAINABLE SITES**		**24 Points**	**Team**	**Remarks**
Y				Prereq 1	**Construction Activity Pollution Prevention**	**Required**	civil	E&S plan, descibe local regulations
Y				Prereq 2	**Environmental Site Assessment**	**Required**	owner	
1				Credit 1	**Site Selection**	**1**	civil	
			4	Credit 2	**Development Density and Community Connectivity**	**4**	civil	
			1	Credit 3	**Brownfield Redevelopment**	**1**	civil	
		4		Credit 4.1	**Alternative Transportation -** Public Transportation Access	**4**	civil	
	1			Credit 4.2	**Alternative Transportation -** Bicycle Storage and Changing Rooms	**1**	architect	
2				Credit 4.3	**Alternative Transportation -** Low-Emitting and Fuel-Efficient Vehicles	**2**	civil	
		2		Credit 4.4	**Alternative Transportation -** Parking Capacity	**2**	civil	
		1		Credit 5.1	**Site Development -** Protect or Restore Habitat	**1**	civil	
1				Credit 5.2	**Site Development -** Maximize Open Space	**1**	civil	
1				Credit 6.1	**Stormwater Design -** Quantity Control	**1**	civil	
1				Credit 6.2	**Stormwater Design -** Quality Control	**1**	civil	
		1		Credit 7.1	**Heat Island Effect -** Nonroof	**1**	civil	
1				Credit 7.2	**Heat Island Effect -** Roof	**1**	architect	
		1		Credit 8	**Light Pollution Reduction**	**1**	MEP	
1				Credit 9	**Site Master Plan**	**1**	architect	
1				Credit 10	**Joint Use Facilities**	**1**	owner	

Yes	?	?	No						
4	6	1	0	**WATER EFFICIENCY**		**11 Points**	**Team**	**Remarks**
Y				Prereq 1	**Water Use Reduction**	**Required**	MEP	
2	2			Credit 1	**Water Efficient Landscaping**	**2 to 4**	architect	xeriscaping or harvested rainwater
					Reduce by 50%	2		
					No Potable Water Use or Irrigation	4		
	2			Credit 2	**Innovative Wastewater Technologies**	**2**	architect	requires waterless urinals or RWH
2	2			Credit 3	**Water Use Reduction**	**2 to 4**	MEP	tough without credit 2
					Reduce by 30%	2		
					Reduce by 35%	3		
					Reduce by 40%	4		
		1		Credit 4	**Process Water Use Reduction**	**1**	MEP	is food service part of the scope? No

Yes	?	?	No	ENERGY & ATMOSPHERE	33 Points	Team	Remarks
13	12	8	0				
Y				Prereq 1 **Fundamental Commissioning of Building Energy Systems**	**Required**	owner	
Y				Prereq 2 **Minimum Energy Performance**	**Required**	MEP	
Y				Prereq 3 **Fundamental Refrigerant Management**	**Required**	MEP	
12	3	4		Credit 1 **Optimize Energy Performance**	**1 to 19**	MEP	
				Improve by 12% for New Buildings or 8% for Existing Building Renovations	1		
				Improve by 14% for New Buildings or 10% for Existing Building Renovations	2		
				Improve by 16% for New Buildings or 12% for Existing Building Renovations	3		
				Improve by 18% for New Buildings or 14% for Existing Building Renovations	4		
				Improve by 20% for New Buildings or 16% for Existing Building Renovations	5		
				Improve by 22% for New Buildings or 18% for Existing Building Renovations	6		
				Improve by 24% for New Buildings or 20% for Existing Building Renovations	7		
				Improve by 26% for New Buildings or 22% for Existing Building Renovations	8		
				Improve by 28% for New Buildings or 24% for Existing Building Renovations	9		
				Improve by 30% for New Buildings or 26% for Existing Building Renovations	10		
				Improve by 32% for New Buildings or 28% for Existing Building Renovations	11		
				Improve by 34% for New Buildings or 30% for Existing Building Renovations	12		
				Improve by 36% for New Buildings or 32% for Existing Building Renovations	13		
				Improve by 38% for New Buildings or 34% for Existing Building Renovations	14		
				15 Improve by 40% for New Buildings or 36% for Existing Building Renovations	15		
				Improve by 42% for New Buildings or 38% for Existing Building Renovations	16		
				Improve by 44% for New Buildings or 40% for Existing Building Renovations	17		
				Improve by 46% for New Buildings or 42% for Existing Building Renovations	18		
				Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19		
1	2	4		Credit 2 **On-Site Renewable Energy**	**1 to 7**	MEP	
				1 1% Renewable Energy	1		
				3% Renewable Energy	2		
				5% Renewable Energy	3		
				7% Renewable Energy	4		
				9% Renewable Energy	5		
				11% Renewable Energy	6		
				13% Renewable Energy	7		
	2			Credit 3 **Enhanced Commissioning**	**2**	owner	
	1			Credit 4 **Enhanced Refrigerant Management**	**1**	MEP	
	2			Credit 5 **Measurement and Verification**	**2**	MEP	
	2			Credit 6 **Green Power**	**2**	owner	

LEED 2009 for Schools
Project Scorecard

Project Name: Highpoint High School - Maximum Renovation
Project Address: 3601 Powder Mill Rd, Beltsville, MD 20705

Yes	?	?	No	MATERIALS & RESOURCES	13 Points	Team	Remarks
6	1	2	4				
Y				Prereq 1 **Storage and Collection of Recyclables**	**Required**	architect	
			2	Credit 1.1 **Building Reuse** - Maintain Existing Walls, Floors and Roof	**1 to 2**	architect	
				Reuse 75%	1		
				Reuse 95%	2		
			1	Credit 1.2 **Building Reuse -** Maintain Interior Nonstructural Elements	**1**	architect	
2				Credit 2 **Construction Waste Management**	**1 to 2**	contractor	
				50% Recycled or Salvaged	1		
				2 75% Recycled or Salvaged	2		
		1	1	Credit 3 **Materials Reuse**	**1 to 2**	architect	
				Reuse 5%	1		
				Reuse 10%	2		
2				Credit 4 **Recycled Content**	**1 to 2**	architect	
				10% of Content	1		
				2 20% of Content	2		
2				Credit 5 **Regional Materials**	**1 to 2**	architect	
				10% of Materials	1		
				2 20% of Materials	2		
		1		Credit 6 **Rapidly Renewable Materials**	**1**	architect	
	1			Credit 7 **Certified Wood**	**1**	architect	

Yes	?	?	No					
7	7	2	3	**INDOOR ENVIRONMENTAL QUALITY**		**19 Points**	**Team**	**Remarks**
Y				Prereq 1	**Minimum Indoor Air Quality Performance**	**Required**	MEP	
Y				Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	**Required**	owner	
Y				Prereq 3	**Minimum Acoustic Performance**	**Required**	architect	
	1			Credit 1	**Outdoor Air Delivery Monitoring**	**1**	MEP	
		1		Credit 2	**Increased Ventilation**	**1**	MEP	
1				Credit 3.1	**Construction Indoor Air Quality Management Plan -** During Construction	**1**	MEP	
	1			Credit 3.2	**Construction Indoor Air Quality Management Plan -** Before Occupancy	**1**	MEP	
1				Credit 4.1	**Low-Emitting Materials -** Adhesives and Sealants	**1** *	architect	
1				Credit 4.2	**Low-Emitting Materials -** Paints and Coatings	**1** *	architect	
1				Credit 4.3	**Low-Emitting Materials -** Flooring Systems	**1** *	architect	
1				Credit 4.4	**Low-Emitting Materials -** Composite Wood and Agrifiber Products	**1** *	architect	
				Credit 4.5	**Low-Emitting Materials -** Furniture and Furnishings	**1** *	architect	
				Credit 4.6	**Low-Emitting Materials -** Ceiling and Wall Systems	**1** *	architect	
	1			Credit 5	**Indoor Chemical and Pollutant Source Control**	**1**	architect	
1				Credit 6.1	**Controllability of Systems -** Lighting	**1**	MEP	
	1			Credit 6.2	**Controllability of Systems -** Thermal Comfort	**1**	MEP	
1				Credit 7.1	**Thermal Comfort -** Design	**1**	MEP	
	1			Credit 7.2	**Thermal Comfort -** Verification	**1**	owner	
			3	Credit 8.1	**Daylight and Views -** Daylight	**1 to 3**	architect	
					75% of Classroom Spaces	1		
					90% of Classroom Spaces	1		
					75% of other Regularly Occupied Spaces	1		
	1			Credit 8.2	**Daylight and Views -** Views (90% of regularly occupied spaces)	**1**	architect	
		1		Credit 9	**Enhanced Acoustical Performance**	**1**	architect	
	1			Credit 10	**Mold Prevention**	**1**	architect	
Yes	?	?	No					
3	2	1	0	**INNOVATION IN DESIGN**		**6 Points**	**Team**	**Remarks**
2	1	1		Credit 1	**Innovation in Design**	**1 to 4**		
				1	Innovation or Exemplary Performance - Green Cleaning	1	owner	
				1	Innovation or Exemplary Performance - Exemplary Performance (Construction Waste)	1	MEP	
				1	Innovation or Exemplary Performance - Exemplary Performance (Stormwater)	1	MEP	
					Innovation or Exemplary Performance - TBD	1	contractor	
1				Credit 2	**LEED® Accredited Professional**	**1**	architect	
	1			Credit 3	**The School as a Teaching Tool**	**1**	architect	
Yes	?	?	No					
3	0	1	0	**REGIONAL PRIORITY**		**4 Points**	**Team**	**Remarks**
3		1		Credit 1	**Regional Priority**	**1 to 4**		
				1	Regionally Defined Credit Achieved - EAc2 - On-site renewable Energy - 1% min.	1	MEP	
				1	Regionally Defined Credit Achieved - MRc2 - Construction Waste Management	1	contractor	
				1	Regionally Defined Credit Achieved - SSc6.1 - Stormwater Design Quantity	1	civil	
					Regionally Defined Credit Achieved - TBD	1	assign	
Yes	?	?	No					
45	29	24	12	**PROJECT TOTALS (Certification Estimates)**		**110 Points**		

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

SHWGROUP

LEED Scorecard - New Construction

LEED 2009 for Schools
Project Scorecard

SHWGROUP

Project Name: Highpoint High School - New Construction
Project Address: 3601 Powder Mill Rd, Beltsville, MD 20705

Yes	?	?	No						
9	3	7	5	**SUSTAINABLE SITES**			**24 Points**	**Team**	**Remarks**
Y				Prereq 1	**Construction Activity Pollution Prevention**		**Required**	civil	
Y				Prereq 2	**Environmental Site Assessment**		**Required**	owner	
1				Credit 1	**Site Selection**		**1**	civil	
			4	Credit 2	**Development Density and Community Connectivity**		**4**	civil	
			1	Credit 3	**Brownfield Redevelopment**		**1**	civil	
		4		Credit 4.1	**Alternative Transportation -** Public Transportation Access		**4**	civil	
	1			Credit 4.2	**Alternative Transportation -** Bicycle Storage and Changing Rooms		**1**	architect	
2				Credit 4.3	**Alternative Transportation -** Low-Emitting and Fuel-Efficient Vehicles		**2**	civil	
		2		Credit 4.4	**Alternative Transportation -** Parking Capacity		**2**	civil	
		1		Credit 5.1	**Site Development -** Protect or Restore Habitat		**1**	civil	
1				Credit 5.2	**Site Development -** Maximize Open Space		**1**	civil	
1				Credit 6.1	**Stormwater Design -** Quantity Control		**1**	civil	
1				Credit 6.2	**Stormwater Design -** Quality Control		**1**	civil	
	1			Credit 7.1	**Heat Island Effect -** Nonroof		**1**	civil	
1				Credit 7.2	**Heat Island Effect -** Roof		**1**	architect	
	1			Credit 8	**Light Pollution Reduction**		**1**	MEP	
1				Credit 9	**Site Master Plan**		**1**	architect	
1				Credit 10	**Joint Use Facilities**		**1**	owner	

Yes	?	?	No						
6	5	0	0	**WATER EFFICIENCY**			**11 Points**	**Team**	**Remarks**
Y				Prereq 1	**Water Use Reduction**		**Required**	MEP	
4				Credit 1	**Water Efficient Landscaping**		**2 to 4**	civil	
					☐	Reduce by 50%	2		
					☐	No Potable Water Use or Irrigation	4		
	2			Credit 2	**Innovative Wastewater Technologies**		**2**	architect	
2	2			Credit 3	**Water Use Reduction**		**2 to 4**	MEP	
					☐	Reduce by 30%	2		
					☐	Reduce by 35%	3		
					☐	Reduce by 40%	4		
	1			Credit 4	**Process Water Use Reduction**		**1**	MEP	

Yes	?	?	No						
23	10	0	0	**ENERGY & ATMOSPHERE**		**33 Points**	**Team**	**Remarks**
Y				Prereq 1	**Fundamental Commissioning of Building Energy Systems**	**Required**	owner	
Y				Prereq 2	**Minimum Energy Performance**	**Required**	MEP	
Y				Prereq 3	**Fundamental Refrigerant Management**	**Required**	MEP	
19				Credit 1	**Optimize Energy Performance**	**1 to 19**	MEP	
					Improve by 12% for New Buildings or 8% for Existing Building Renovations	1		
					Improve by 14% for New Buildings or 10% for Existing Building Renovations	2		
					Improve by 16% for New Buildings or 12% for Existing Building Renovations	3		
					Improve by 18% for New Buildings or 14% for Existing Building Renovations	4		
					Improve by 20% for New Buildings or 16% for Existing Building Renovations	5		
					Improve by 22% for New Buildings or 18% for Existing Building Renovations	6		
					Improve by 24% for New Buildings or 20% for Existing Building Renovations	7		
					Improve by 26% for New Buildings or 22% for Existing Building Renovations	8		
					Improve by 28% for New Buildings or 24% for Existing Building Renovations	9		
					Improve by 30% for New Buildings or 26% for Existing Building Renovations	10		
					Improve by 32% for New Buildings or 28% for Existing Building Renovations	11		
					Improve by 34% for New Buildings or 30% for Existing Building Renovations	12		
					Improve by 36% for New Buildings or 32% for Existing Building Renovations	13		
					Improve by 38% for New Buildings or 34% for Existing Building Renovations	14		
				15	Improve by 40% for New Buildings or 36% for Existing Building Renovations	15		
					Improve by 42% for New Buildings or 38% for Existing Building Renovations	16		
					Improve by 44% for New Buildings or 40% for Existing Building Renovations	17		
					Improve by 46% for New Buildings or 42% for Existing Building Renovations	18		
					Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19		
3	4			Credit 2	**On-Site Renewable Energy**	**1 to 7**	MEP	
					1% Renewable Energy	1		
					3% Renewable Energy	2		
					5% Renewable Energy	3		
					7% Renewable Energy	4		
					9% Renewable Energy	5		
					11% Renewable Energy	6		
					13% Renewable Energy	7		
	2			Credit 3	**Enhanced Commissioning**	**2**	owner	
1				Credit 4	**Enhanced Refrigerant Management**	**1**	MEP	
	2			Credit 5	**Measurement and Verification**	**2**	MEP	
	2			Credit 6	**Green Power**	**2**	owner	

LEED 2009 for Schools
Project Scorecard

Project Name: Highpoint High School - New Construction
Project Address: 3601 Powder Mill Rd, Beltsville, MD 20705

Yes	?	?	No	MATERIALS & RESOURCES	13 Points	Team	Remarks
6	1	1	5				
Y				Prereq 1 **Storage and Collection of Recyclables**	**Required**	architect	
			2	Credit 1.1 **Building Reuse** - Maintain Existing Walls, Floors and Roof	**1 to 2**	architect	
				Reuse 75%	1		
				Reuse 95%	2		
			1	Credit 1.2 **Building Reuse -** Maintain Interior Nonstructural Elements	**1**	architect	
2				Credit 2 **Construction Waste Management**	**1 to 2**	contractor	
				50% Recycled or Salvaged	1		
				2 75% Recycled or Salvaged	2		
			2	Credit 3 **Materials Reuse**	**1 to 2**	architect	
				Reuse 5%	1		
				Reuse 10%	2		
2				Credit 4 **Recycled Content**	**1 to 2**	architect	
				10% of Content	1		
				2 20% of Content	2		
2				Credit 5 **Regional Materials**	**1 to 2**	architect	
				10% of Materials	1		
				2 20% of Materials	2		
		1		Credit 6 **Rapidly Renewable Materials**	**1**	architect	
	1			Credit 7 **Certified Wood**	**1**	architect	

Yes	?	?	No					
12	6	1	0	**INDOOR ENVIRONMENTAL QUALITY**		**19 Points**	**Team**	**Remarks**
Y				Prereq 1	**Minimum Indoor Air Quality Performance**	**Required**	MEP	
Y				Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	**Required**	owner	
Y				Prereq 3	**Minimum Acoustic Performance**	**Required**	architect	
	1			Credit 1	**Outdoor Air Delivery Monitoring**	**1**	MEP	
		1		Credit 2	**Increased Ventilation**	**1**	MEP	
1				Credit 3.1	**Construction Indoor Air Quality Management Plan -** During Construction	**1**	MEP	
	1			Credit 3.2	**Construction Indoor Air Quality Management Plan -** Before Occupancy	**1**	MEP	
1				Credit 4.1	**Low-Emitting Materials -** Adhesives and Sealants	**1** *	architect	
1				Credit 4.2	**Low-Emitting Materials -** Paints and Coatings	**1** *	architect	
1				Credit 4.3	**Low-Emitting Materials -** Flooring Systems	**1** *	architect	
1				Credit 4.4	**Low-Emitting Materials -** Composite Wood and Agrifiber Products	**1** *	architect	
				Credit 4.5	**Low-Emitting Materials -** Furniture and Furnishings	**1** *	architect	
				Credit 4.6	**Low-Emitting Materials -** Ceiling and Wall Systems	**1** *	architect	
	1			Credit 5	**Indoor Chemical and Pollutant Source Control**	**1**	architect	
1				Credit 6.1	**Controllability of Systems -** Lighting	**1**	MEP	
	1			Credit 6.2	**Controllability of Systems -** Thermal Comfort	**1**	MEP	
1				Credit 7.1	**Thermal Comfort -** Design	**1**	MEP	
	1			Credit 7.2	**Thermal Comfort -** Verification	**1**	owner	
2	1			Credit 8.1	**Daylight and Views -** Daylight	**1 to 3**	architect	
					75% of Classroom Spaces	1		
					90% of Classroom Spaces	1		
					75% of other Regularly Occupied Spaces	1		
1				Credit 8.2	**Daylight and Views -** Views (90% of regularly occupied spaces)	**1**	architect	
1				Credit 9	**Enhanced Acoustical Performance**	**1**	architect	
1				Credit 10	**Mold Prevention**	**1**	architect	
Yes	?	?	No					
3	2	1	0	**INNOVATION IN DESIGN**		**6 Points**	**Team**	**Remarks**
2	1	1		Credit 1	**Innovation in Design**	**1 to 4**		
				1	Innovation or Exemplary Performance - Green Cleaning	1	owner	
				1	Innovation or Exemplary Performance - Exemplary Performance (Construction Waste)	1	contractor	
				1	Innovation or Exemplary Performance - Exemplary Performance (Stormwater)	1	civil	
					Innovation or Exemplary Performance - TBD	1	assign	
1				Credit 2	**LEED® Accredited Professional**	**1**	architect	
	1			Credit 3	**The School as a Teaching Tool**	**1**	architect	
Yes	?	?	No					
3	0	1	0	**REGIONAL PRIORITY**		**4 Points**	**Team**	**Remarks**
3		1		Credit 1	**Regional Priority**	**1 to 4**		
				1	Regionally Defined Credit Achieved - EAc2 - On-site renewable Energy - 1% min.	1	MEP	
				1	Regionally Defined Credit Achieved - MRc2 - Construction Waste Management	1	contractor	
				1	Regionally Defined Credit Achieved - SSc6.1 - Stormwater Design Quantity	1	civil	
					Regionally Defined Credit Achieved - TBD	1	assign	
Yes	?	?	No					
62	27	11	10	**PROJECT TOTALS (Certification Estimates)**		**110 Points**		

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

SHWGROUP

LEED Scorecard - Partial Reuse

LEED 2009 for Schools
Project Scorecard

SHWGROUP

Project Name: Highpoint High School - Hybrid
Project Address: 3601 Powder Mill Rd, Beltsville, MD 20705

Yes	?	?	No						
9	3	7	5	**SUSTAINABLE SITES**		**24 Points**	**Team**	**Remarks**
Y				Prereq 1	**Construction Activity Pollution Prevention**	**Required**	civil	
Y				Prereq 2	**Environmental Site Assessment**	**Required**	owner	
1				Credit 1	**Site Selection**	**1**	civil	
			4	Credit 2	**Development Density and Community Connectivity**	**4**	civil	
			1	Credit 3	**Brownfield Redevelopment**	**1**	civil	
		4		Credit 4.1	**Alternative Transportation -** Public Transportation Access	**4**	civil	
	1			Credit 4.2	**Alternative Transportation -** Bicycle Storage and Changing Rooms	**1**	architect	
2				Credit 4.3	**Alternative Transportation -** Low-Emitting and Fuel-Efficient Vehicles	**2**	civil	
		2		Credit 4.4	**Alternative Transportation -** Parking Capacity	**2**	civil	
		1		Credit 5.1	**Site Development -** Protect or Restore Habitat	**1**	civil	
1				Credit 5.2	**Site Development -** Maximize Open Space	**1**	civil	
1				Credit 6.1	**Stormwater Design -** Quantity Control	**1**	civil	
1				Credit 6.2	**Stormwater Design -** Quality Control	**1**	civil	
	1			Credit 7.1	**Heat Island Effect -** Nonroof	**1**	civil	
1				Credit 7.2	**Heat Island Effect -** Roof	**1**	architect	
	1			Credit 8	**Light Pollution Reduction**	**1**	MEP	
1				Credit 9	**Site Master Plan**	**1**	architect	
1				Credit 10	**Joint Use Facilities**	**1**	owner	

Yes	?	?	No						
6	5	0	0	**WATER EFFICIENCY**		**11 Points**	**Team**	**Remarks**
Y				Prereq 1	**Water Use Reduction**	**Required**	MEP	
4				Credit 1	**Water Efficient Landscaping**	**2 to 4**	civil	
					Reduce by 50%	2		
					No Potable Water Use or Irrigation	4		
	2			Credit 2	**Innovative Wastewater Technologies**	**2**	architect	
2	2			Credit 3	**Water Use Reduction**	**2 to 4**	MEP	
					Reduce by 30%	2		
					Reduce by 35%	3		
					Reduce by 40%	4		
	1			Credit 4	**Process Water Use Reduction**	**1**	MEP	

Yes	?	?	No	ENERGY & ATMOSPHERE	33 Points	Team	Remarks
23	10	0	0				
Y				Prereq 1 **Fundamental Commissioning of Building Energy Systems**	**Required**	owner	
Y				Prereq 2 **Minimum Energy Performance**	**Required**	MEP	
Y				Prereq 3 **Fundamental Refrigerant Management**	**Required**	MEP	
19				Credit 1 **Optimize Energy Performance**	**1 to 19**	MEP	
				Improve by 12% for New Buildings or 8% for Existing Building Renovations	1		
				Improve by 14% for New Buildings or 10% for Existing Building Renovations	2		
				Improve by 16% for New Buildings or 12% for Existing Building Renovations	3		
				Improve by 18% for New Buildings or 14% for Existing Building Renovations	4		
				Improve by 20% for New Buildings or 16% for Existing Building Renovations	5		
				Improve by 22% for New Buildings or 18% for Existing Building Renovations	6		
				Improve by 24% for New Buildings or 20% for Existing Building Renovations	7		
				Improve by 26% for New Buildings or 22% for Existing Building Renovations	8		
				Improve by 28% for New Buildings or 24% for Existing Building Renovations	9		
				Improve by 30% for New Buildings or 26% for Existing Building Renovations	10		
				Improve by 32% for New Buildings or 28% for Existing Building Renovations	11		
				Improve by 34% for New Buildings or 30% for Existing Building Renovations	12		
				Improve by 36% for New Buildings or 32% for Existing Building Renovations	13		
				Improve by 38% for New Buildings or 34% for Existing Building Renovations	14		
				15 Improve by 40% for New Buildings or 36% for Existing Building Renovations	15		
				Improve by 42% for New Buildings or 38% for Existing Building Renovations	16		
				Improve by 44% for New Buildings or 40% for Existing Building Renovations	17		
				Improve by 46% for New Buildings or 42% for Existing Building Renovations	18		
				Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19		
3	4			Credit 2 **On-Site Renewable Energy**	**1 to 7**	MEP	
				1% Renewable Energy	1		
				3% Renewable Energy	2		
				5% Renewable Energy	3		
				7% Renewable Energy	4		
				9% Renewable Energy	5		
				11% Renewable Energy	6		
				13% Renewable Energy	7		
	2			Credit 3 **Enhanced Commissioning**	**2**	owner	
1				Credit 4 **Enhanced Refrigerant Management**	**1**	MEP	
	2			Credit 5 **Measurement and Verification**	**2**	MEP	
	2			Credit 6 **Green Power**	**2**	owner	

LEED 2009 for Schools
Project Scorecard

Project Name: Highpoint High School - Hybrid
Project Address: 3601 Powder Mill Rd, Beltsville, MD 20705

Yes	?	?	No	MATERIALS & RESOURCES		13 Points	Team	Remarks
6	1	1	5					
Y				Prereq 1	**Storage and Collection of Recyclables**	**Required**	architect	
			2	Credit 1.1	**Building Reuse** - Maintain Existing Walls, Floors and Roof	**1 to 2**	architect	
					Reuse 75%	1		
					Reuse 95%	2		
			1	Credit 1.2	**Building Reuse -** Maintain Interior Nonstructural Elements	**1**	architect	
2				Credit 2	**Construction Waste Management**	**1 to 2**	contractor	
					50% Recycled or Salvaged	1		
					75% Recycled or Salvaged	2		
			2	Credit 3	**Materials Reuse**	**1 to 2**	architect	
					Reuse 5%	1		
					Reuse 10%	2		
2				Credit 4	**Recycled Content**	**1 to 2**	architect	
					10% of Content	1		
					20% of Content	2		
2				Credit 5	**Regional Materials**	**1 to 2**	architect	
					10% of Materials	1		
					20% of Materials	2		
		1		Credit 6	**Rapidly Renewable Materials**	**1**	architect	
	1			Credit 7	**Certified Wood**	**1**	architect	

Yes	?	?	No						
12	6	1	0	**INDOOR ENVIRONMENTAL QUALITY**		**19 Points**	**Team**	**Remarks**	
Y				Prereq 1	**Minimum Indoor Air Quality Performance**	**Required**	MEP		
Y				Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	**Required**	owner		
Y				Prereq 3	**Minimum Acoustic Performance**	**Required**	architect		
	1			Credit 1	**Outdoor Air Delivery Monitoring**	**1**	MEP		
		1		Credit 2	**Increased Ventilation**	**1**	MEP		
1				Credit 3.1	**Construction Indoor Air Quality Management Plan -** During Construction	**1**	MEP		
	1			Credit 3.2	**Construction Indoor Air Quality Management Plan -** Before Occupancy	**1**	MEP		
1				Credit 4.1	**Low-Emitting Materials -** Adhesives and Sealants	**1** *	architect		
1				Credit 4.2	**Low-Emitting Materials -** Paints and Coatings	**1** *	architect		
1				Credit 4.3	**Low-Emitting Materials -** Flooring Systems	**1** *	architect		
1				Credit 4.4	**Low-Emitting Materials -** Composite Wood and Agrifiber Products	**1** *	architect		
				Credit 4.5	**Low-Emitting Materials -** Furniture and Furnishings	**1** *	architect		
				Credit 4.6	**Low-Emitting Materials -** Ceiling and Wall Systems	**1** *	architect		
	1			Credit 5	**Indoor Chemical and Pollutant Source Control**	**1**	architect		
1				Credit 6.1	**Controllability of Systems -** Lighting	**1**	MEP		
	1			Credit 6.2	**Controllability of Systems -** Thermal Comfort	**1**	MEP		
1				Credit 7.1	**Thermal Comfort -** Design	**1**	MEP		
	1			Credit 7.2	**Thermal Comfort -** Verification	**1**	owner		
2	1			Credit 8.1	**Daylight and Views -** Daylight	**1 to 3**	architect		
					75% of Classroom Spaces	1			
					90% of Classroom Spaces	1			
					75% of other Regularly Occupied Spaces	1			
1				Credit 8.2	**Daylight and Views -** Views (90% of regularly occupied spaces)	**1**	architect		
1				Credit 9	**Enhanced Acoustical Performance**	**1**	architect		
1				Credit 10	**Mold Prevention**	**1**	architect		
Yes	?	?	No						
3	2	1	0	**INNOVATION IN DESIGN**		**6 Points**	**Team**	**Remarks**	
2	1	1		Credit 1	**Innovation in Design**	**1 to 4**			
				1	Innovation or Exemplary Performance - Green Cleaning	1	owner		
				1	Innovation or Exemplary Performance - Exemplary Performance (Construction Waste)	1	contractor		
				1	Innovation or Exemplary Performance - Exemplary Performance (Stormwater)	1	civil		
					Innovation or Exemplary Performance - TBD	1	assign		
1				Credit 2	**LEED® Accredited Professional**	**1**	architect		
	1			Credit 3	**The School as a Teaching Tool**	**1**	architect		
Yes	?	?	No						
3	0	1	0	**REGIONAL PRIORITY**		**4 Points**	**Team**	**Remarks**	
3		1		Credit 1	**Regional Priority**	**1 to 4**			
				1	Regionally Defined Credit Achieved - EAc2 - On-site renewable Energy - 1% min.	1	MEP		
				1	Regionally Defined Credit Achieved - MRc2 - Construction Waste Management	1	contractor		
				1	Regionally Defined Credit Achieved - SSc6.1 - Stormwater Design Quantity	1	civil		
					Regionally Defined Credit Achieved - TBD	1	assign		
Yes	?	?	No						
62	27	11	10	**PROJECT TOTALS (Certification Estimates)**		**110 Points**			

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

Technology for 21st Century Learning Environments

The learning environment of a new high school must incorporate the most progressive technology available to ensure that classrooms challenge students approriately and provide the tools they need to explore for as many years as possible. Technology must be planned to touch every type of learner - a challenge given the range of learning styles that exist. Ultimately the best technology is that which engages a students drive to explore and self-teach. The following is comprehensive a list of technology found in the very best of 21st Century learning environments today:

- Visual (Displays, Video Projectors)
- Hand On (Interactive/ Touch)
- Audio (Equal level sound in the spaces)
- Collaboration (Teaming/ Group Study)
- Dual Enrollment (Distance Learning)
- Wireless (Mobile/ Flexible Every Space a Learning Space)
- Visional Displays (Current Events and Announcements)
- Student response Systems (Instant Results/Feedback - Clickers)
- Electronic Migration – Test Results – (Saving Instruction Time)
- Safety & Security
- Phones (External Communication Links E911)
- Bi-directional (Internal Communications)
- Card Access (Building Control / Lock Down)
- Surveillance (Mini-Dome Camera / External / Both Day Night Ability)

Local Comprehensive Land Use Planning

Every high school sits at the heart of the community it serves encompassed by its neighborhood, its town, by satellite towns each with their own planning goals, within a larger watershed area, a cultural and economic context, the county and ultimately the state. Development of any public project generates enormous community interest and a represents progress towards and reinforcement of community goals. As such it is critical to view the re-development of the High Point High School and its site in light of the local planning agenda in attempting to best serve the areas unique character and identity.

High Point High School is located in Beltsville, an area within Prince George's County, Maryland located within the District of Columbia metro area. Adjacent cities and towns are Laurel to the northeast, South Laurel to the northeast, Beltsville to the east, Calverton to the west, and Hillandale to the southwest. Nearby features are 495/Beltway to the south, I95 to the east, Galway Park, Paint Branch River, Cross Creek Golf Course, and commercial areas bracket each end of Powder Mill Road (PMR) around the site – PMR & New Hampshire and PMR & I95. Nearby historic places of interest are the Robert B. Morse Water Filtration Plant, the Polychrome Historic District, the North Corner District Boundary Stone, The Silver Spring, and the Historic Savage Mill. Local master plans of relevance and influence are as follows:

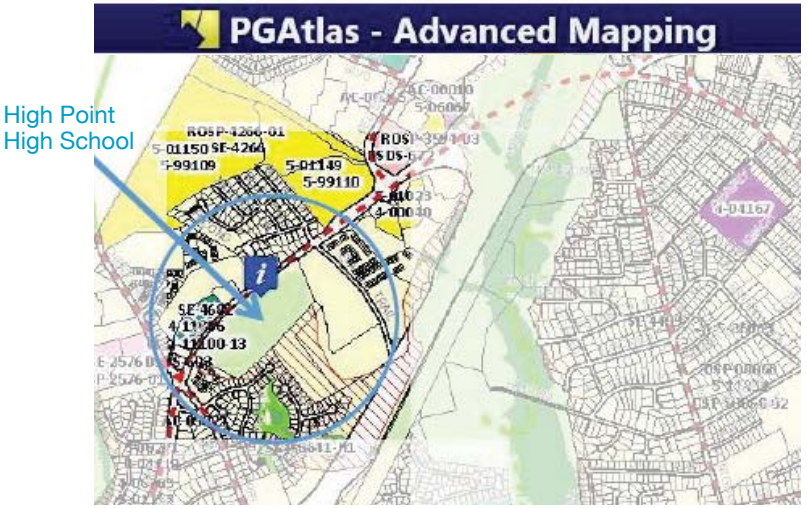
Sub-Region 1 Master Plan and Sectional Map Amendment

Montgomery County's White Oak Master Plan

Fairland Master Plan

City of Laurel Master Plan

The site is also falls within the evaluation area of the "Green Infrastructure Plan" and is identified as representing a ""Green Infrastructure Plan" network gap. The High Point High School has also been designated a "Priority Funding Area" by the state of Maryland. The site is zoned RR for residential but as a school is exempt from local zoning restrictions. The site lies within the Anacostia watershed, is exempt from the tree conservation plan and has no easements.



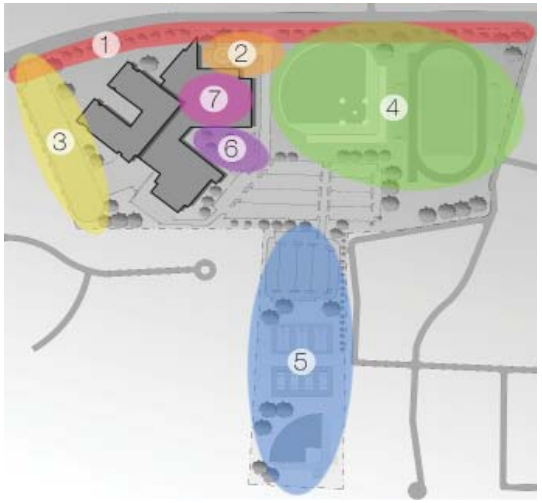
Prince George's County Planning Map

Site Design Criteria

Site and Landscape Design

The High Point High School site can best be described by the various zones that work together to serve the school as well as the neighborhood that surrounds it. Each zone has its own unique function, use, character and as a result requires its own differentiated design approach. Suggested project goals for the development of the site are as follows:

- Provide a positive, inviting and identifiable image along Powder Mill Road
- Create a school campus feel and a strong sense of place
- Provide a pedestrian friendly and universally accessible environment
- Satisfy integrated, landscaped stormwater management features as required by state requirements
- Provide a visual and physical connection to all parts of the campus – between building and site amenities
- Provide a sustainable landscape
- Safety & Security
- Phones (External Communication Links E911)
- Bi-directional (Internal Communications)
- Card Access (Building Control / Lock Down)



1. Street Frontage
2. Tree-lined Entranceways
3. Bus Drop-off
4. Track and Baseball Field
5. Ball Courts and Buffers
6. Urban Garden
7. Green Roof

Site Zone Diagram

The design approach for each zone is described as follows:

Zone 1 The Street Frontage

Zone 1 is the street frontage along Powder Mills Road. The treatment of this edge conveys the first impression of the school. Along the school side of Powder Mill Road, there are utility poles and overhead wires. This condition will prohibit the planting of major deciduous trees. Only minor deciduous/ flowering trees, minor evergreen trees, shrubs and other ground covers can be installed under and in the vicinity of the overhead wires.
Two of the three site plan schemes recommend new parking lots along Powder Mill Road. It is important to provide landscaped buffer/screen along the north side of the parking lot so that the motorist on Powder Mill Road will not have direct view to parking lots on the school ground. In addition, planting islands with major deciduous trees are recommended for the parking lot to provide shade and human comfort, to reduce the heat island effect and to soften the harshness of the vast amount of asphalt paving. The Hybrid Scheme locates the fields adjacent to Powder Mill Road. Landscape buffers and screens will be needed adjacent to fencing provided for ball control.

Example of vegetated screen at street edge

Zone 2 Tree-lined Entranceways and Drop-Off Courts

As shown on concept site plans, several vehicular and pedestrian entranceways are proposed. Major deciduous trees with flower trees in the vicinity as visual accents and seasonal interests are recommended to be placed on both sides of the entranceway, which not only delineate major accesses to the campus visually, but also provide shade and comfort for students, faculty and visitors. They are also the "green linkages" that knit the school campus together.

In the Max Renovation scheme, two landscaped courtyards are proposed. By using the interplay of hardscape and landscape to create spaces with human scale, Courtyards can be used for outdoor class room, a place for congregation or contemplation, an oasis, and a visual relief of building mass. If soil condition permits, this space can potentially be used as a landscape infiltration area for rainwater quality management and offers an education opportunity to the student.

In the All New and Partial Reuse Schemes, a well landscaped parking/drop-off "court" is proposed. The parking/drop-off court would be located at the main building entrance and will provide a courtyard feel that accommodates both pedestrian and vehicles comfortably and safely.

Tree lined walkways create safe, pedestrian friendly zones

Example of courtyard with landscape infusion

Example of landscaped drop-off court

Zone 3 Bus Drop-off

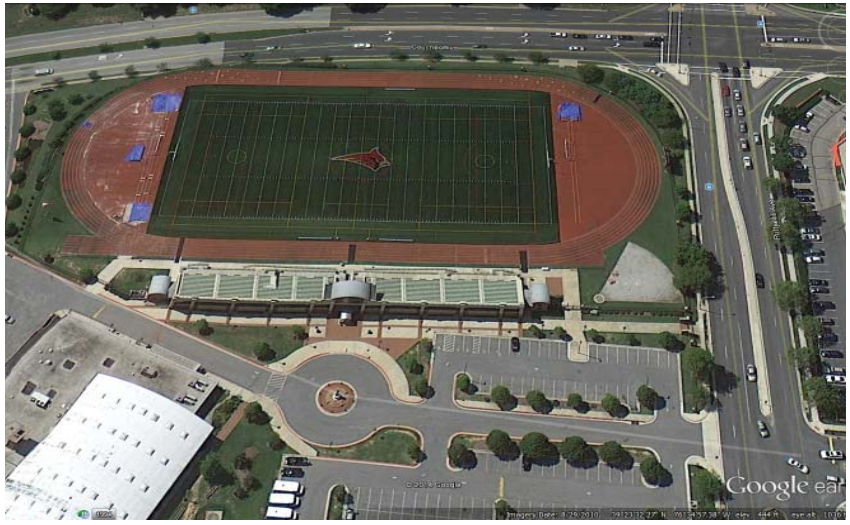
All three schemes recommend a separate bus access along with a bus loop road and parking. Well landscaped plaza/patio at the building entrance and abutting the bus parking area. Trees, decorative paving and site furniture are proposed. This will be the place where students can congregate while waiting for the school opening after being dropped off from school buses. In the Hybrid Scheme, the bus drop off also serves an auxilary parking during the day and potentially off hours access to one of the learning campuses for adult night classes and functions.

Zone 4 Track and Baseball Field

Track and field is an important facility in all high schools. A six to eight lane, 400 meter running track with center soccer/football field in accordance with NCAA standards is proposed. In addition, bleacher seating with storage under the seat for 400 people is proposed as well. Player's benches will be provided within track. The new field will support events such as high jump, long jump, discus, shot-put and pole vault. Chain linked fence with gate surrounding the track and field will be provided. For the Max Renovation Scheme the track and field will remain at its current location. The track and field will be totally renovated. For the All New and Partial Reuse schemes, a new location is proposed. The track and field will be located in the middle of the school ground. It is proposed that the track and field be graded in a bowl form so that the track and field will be situated at low grade so that there will be no direct view to the track and field from Powder Mill Road. This will provide a visual interest for this portion of the school ground and create stronger connection to the lower portion of the site.

The new baseball field located in the east of the track and field, as shown in the All New and Partial Reuse schemes, will have different challenges and opportunities. It is located mostly on the current parking lot site which has its advantage in terms of grade. The west of the proposed ball field is currently a slope and will require some fill to be leveled out. Chain linked fence with gate surrounding the ball field will need to be provided with a sufficient height to keep balls from interfering with parking areas or the road.

Bus parking at Edgewood High School, Hartford County, MD



Track and Field at Calvert Hall High School, Towson, MD

Zone 5 Ball Courts and Buffers

To the south of the main school ground, there is a 350' wide strip of land where basketball courts, tennis courts, a playing field will be provided. Alteration shall be made to render this portion of the site accessible as it is currently not. Bioretention berms will be integrated with the changes in topography to address current stormwater issues. Additionally, new chain linked fencing will be provided. A natural edge between the school ground and the surrounding neighborhood is strongly recommended. A mixture of major deciduous trees, flowering trees, evergreen trees would create buffer zones critical to being a good neighbor.

Zone 6 Urban Garden

An urban garden may be a likely addition to a greenhouse space. This would function as a "productive landscape" in the campus and could be colocated between dining and pro-start. Through the entire process of constructing the beds, seeding, propagating or planting, plants/vegetables, maintaining them during the growing season, and harvesting them, the student will gain the valuable knowledge of the practice of horticulture, nutrition and cooking "fresh".

Zone 7 Green Roof – Landscape on the Building

If budget permits and/or complying with the MDE ESD guidelines requires, a green roof may be recommended. Green roofs can vary from a less expensive "extensive" green roof with suitable green roof plants to a more costly "intensive" green roof with suitable green roof plants, patio, and other hardscape features. The extensive green roof will only be accessible to the maintenance personnel. The intensive green roof will be accessible to students, faculties, and possibly visitors for the enjoyment of the amenities provided by the green roof establishment. Both types of green roof can also provide the benefit of reducing rooftop heat island effect, rainwater harvesting and rainwater quality treatment. The inclusion of green roof will also help obtaining the required LEED credits for the state mandated LEED Gold certification.

A green roof offers superior insulating vaues while reducing storwater run-off

Flat bed gardens may function as teaching tool and food supply for Pro-start program

Forest Conservation

In accordance with the record in Prince George's County Environmental Planning Section (EPS) and a telephone conservation with MNCPPC staff, a letter of exemption (No. E-028-04) was approved in 2004 and has been expired. It is only valid for two years.

In accordance Prince George's County Zoning Code Section 25-119(b)(5) and Environmental Technical Manual Section 5.3, if the development disturbs less than 5,000 square foot of woodland, only an updated Letter of Exemption and a Natural Resource Inventory(NRI) Equivalency Letter will be required to submit. A simplified Forest Stand Delineation may be required to submit along with the Letter of Exemption, at the discretion of EPS staff. If the disturbance of existing woodland is greater than 5,000 SF, NRI, FSD and Tree Conservation Plan (TCP) will be required according to Zoning Code Section 25-119(e).

Due to insufficient woodland information in terms of size and location being available at this time, this study cannot determine if the submission of NRI, FSD and TCP is required. For the bare minimum, an updated Letter of Exemption and a Natural Resource Inventory(NRI) Equivalency Letter along with necessary forms and maps would be required to submit to ESP, if it is determined, based on the field run survey, that less than 5,000 square foot existing woodland would be disturbed.

On-Site Pedestrian/Vehicular Access and Parking

Vehicular access for the facility is obtained by ingress and egress from Powder Mill Road. The sight distance at the driveways should be clear, unobstructed and distanced apart as required by best practices. Pedestrian access to the building from the public way will be offered by on-site sidewalks which will lead to the public sidewalk that flanks Powder Mill Road. In each scheme the main entrance to the building is located on the northwest face of the building is looped by a driveway that provides adequate circulation as well as drop-off This arrangement requires that pedestrians from the building that are accessing the athletic fields cross this drive aisle which is less than ideal. A such carefully delination of pedestrian crossing zones and buffered walkways will be required. In all cases, a traffic/parking study is recommended to study optimum locations for ingress/egress and for parking capacity.

Prince George's County does not have a zoning requirement for public high schools with regard to the amount of parking provided, however current on-site parking of 450 spaces appears to be adequate for students, staff and visitors based on similar high schools in the County. In the hybrid scheme, it is anticipated that the lower parking area would serve for overflow parking as required. The separation of the parking lots on-site into staff, student, and visitor parking, and the separation of the bus and parent drop-off loops, should allow for very functional on-site traffic circulation.

On-Site Loading and Fire Access

Onsite loading areas should provide adequate screening from the public right-of-way and visitors to the site. Fire apparatus should have complete access to the perimeter of the entire building. When this is not possible the drive aisle leading to the loading area shall be designed accessible for fire trucks. Adequate spacing of fire hydrants to provide access for equipment will need to be provided.

Utilities

Water and sewer for the site will continue to be provided from Powder Mill Road. It is anticipated that the site water service will be required to be upgraded to the current WSSC metering standards. Water and sewer service will be provided for the accessory structures located at the athletic fields via on-site connection to the services for the school building.

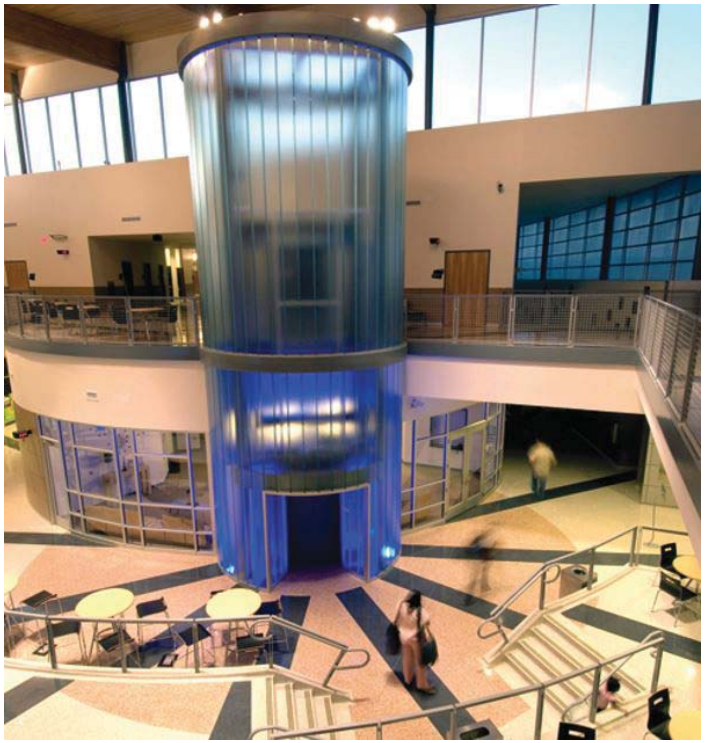
Site Topography and Drainage

The site will drain similar to the existing condition (towards the southwest and the northeast). It is anticipated that overall storm water runoff will be reduced from the existing condition by the reduction in site impervious areas and by providing on-site stormwater management facilities as required by the State of Maryland and Prince George's County. In general this will be accomplished through the use of Environmental Site Design (ESD) techniques to the

maximum extent practicable, which may include small, localized facilities, such as microbioretention, and alternative surfaces. In order to appropriately compensate for the amount of hardscape, it is anticipated that underground storage will be required as well.

It is likely that retaining walls will be required to mitigate the change in elevation across the bus loop area. In addition grading improvements should be provided to correct current drainage problems and render the sports fields at the southern portion of the site accessible.

Preliminary Design



Panoramic view of current front elevation of school and bus drop-off zone

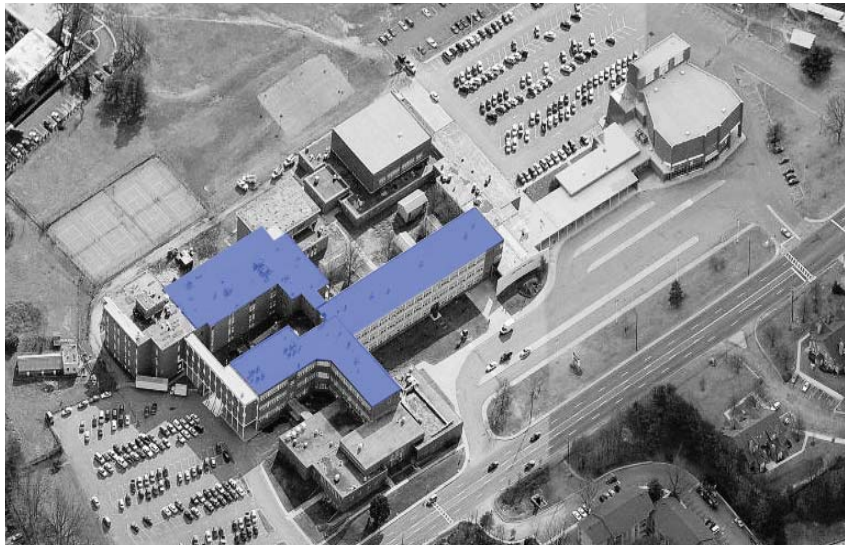
Introduction

The following studies are the result of a significant effort undertaken by Prince George's County Public Schools to implement major academic reform as they move towards a "Career Academies" model. This reform brings substantial change to the educational structure and, subsequently, the physical school facilities that house that structure. Ultimately each 'campus' must support the ideology that drives today's academic model while offering the flexibility that is needed to transform with the inevitable ideological evolution that will occur over time. The new school design must satisfy all aspects of the Educational Specifications and leverage the highest and best use of the site it sits on. It must, more importantly, provide the visionary, inspiring environment that is needed to empower the students that will pass through its doors and into the world beyond.

Max Renovation Scheme

The Maximum Renovation approach utilizes a combination of new construction and rehabilitation of 52% of the existing building as part of a massive effort to transform the existing school into a 21st Century - Career focused learning environment.

Critical to the Renovation concept is a commitment to the re-use of existing academic space in the creation of the new learning campus environments. The focus of renovations, with the exception of the Auditorium, is almost exclusively on existing academic space. The existing building's academic space is provided in two separate but connected wings – the north (3 story) and south (four story) academic bar buildings. The wings are currently configured as double loaded classroom bar buildings which requires significant alteration to create the four distinct campuses with core space at the center of each required per the Educational Specifications. Existing structure will need to be exposed and partitions and ceilings removed to allow for the creation of entirely new environment within the existing footprint.



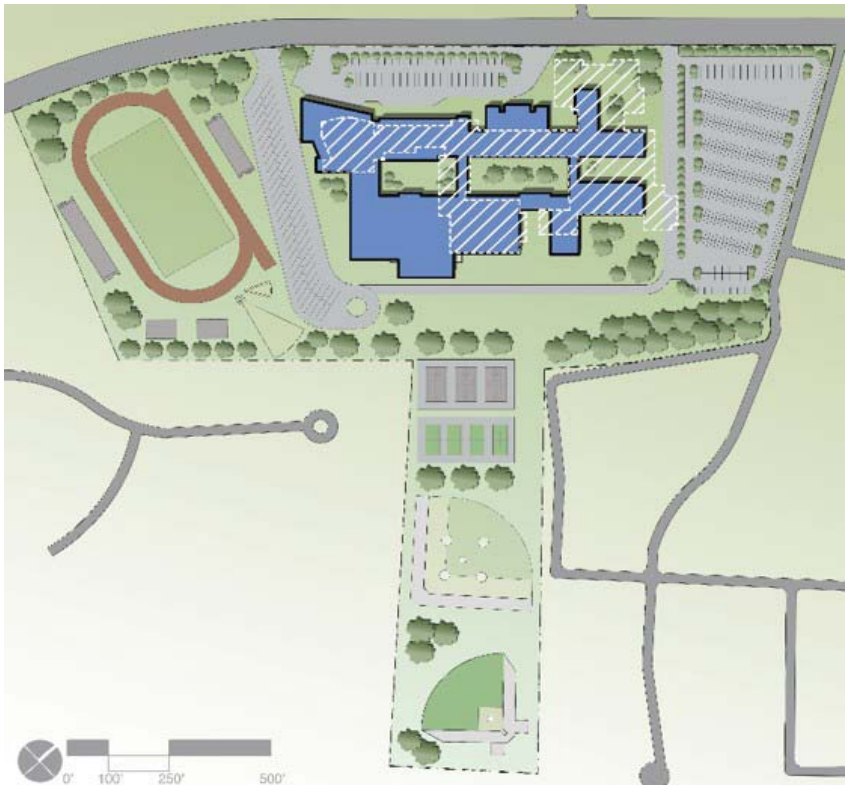
Northeast aerial view of school showing existing academic wings

In addition to academic renovations, two new academic volumes are proposed: one at the front of the building to create the first campus and one at the south of the building off the four story academic building to create the fourth campus.

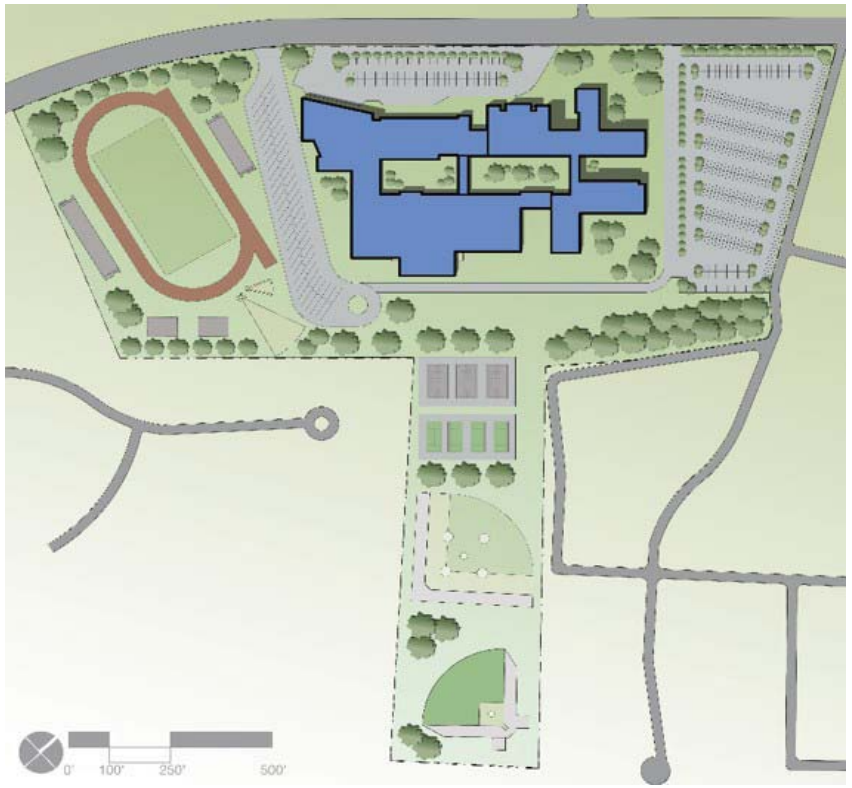
Northwest view of Auditorium

As the largest in the county the existing Auditorium serves as significant asset to the school and its neighboring communities. Although requiring some modification to provide both new and accessible seating, improvements to the interior finishes and upgrades to performance/audio-visual technology, the existing auditorium is well suited to adapting to the current Educational Specifications.

New construction is focused on the spaces which support the academic functions – media center, arts spaces, physical education spaces, and cafeteria/Foodservice. Demolition is largely focused on 1) cleaning up existing academic space that is not well suited to the use as a career focused educational environment, and 2) removing academic support spaces that must be modernized: the one story foodservice portion of the



Proposed Max Renovation site plan showing existing building footprint in white



Proposed Max Renovation site plan

building including the cafeteria & media center, the performing arts wing, the vocational spaces lining the north-south corridor leading to the existing gym, the auxiliary gym and the north-south bar at the eastern end of the four story academic building.

The configuration of the site in this scheme requires alteration to separate bus and pedestrian/student drop off traffic, renovate the field and track area, and create a larger parking lot at the east side of the site. A new bus loop takes buses to the rear of the building allowing students to enter and exit directly from the Cafeteria for arrival and dismissal. Unfortunately the southern portion of the "T" shaped site is too narrow to accommodate the regulation baseball field required by the Educations Specifications. Further this scheme as a maximum renovation scheme does not clear any additional space in the northern portion of the site that might otherwise accommodate the large element. This scheme provides two softball fields in lieu of the softball and baseball fields called for.

Structurally the building is a combination of systems – concrete frame and waffle slab in the original building (three story main bar running east from entry) built in 1954 and a protected steel frame with composite slab system at the portion of the building that was added in 1967 to create the southern academic building four story tower. The structure in general is good condition

and suitable for re-use. The existing waffle slabs, in particular, offer an interesting exposed ceiling structure in certain classrooms proposed for re-use as campus 2 and 3. This physical characteristic is worth preserving as the configuration lends itself to the higher ceilings required by the academy program. By and large structural framing and load bearing walls will remain as is with only minor modifications in selected locations.

The poor insulation value and deteriorating condition of existing exterior walls is causing significant heat loss in winter and heat gain in summer. A new, retrofit, high-performance exterior wall cladding system over the entire existing building volume is proposed to assist in transforming the school into an energy-efficient building. Exterior masonry walls will be reconstructed as required by the new high performance envelope, the roofing will be replaced, and new exterior doors and windows will be installed at most locations. The existing school program will remain in operation during construction. This will require careful planning and sequencing of construction operations to ensure that delivery of the educational program is not negatively impacted and that students, faculty and administrators are safe. The goal will be to separate various sections of the existing building in sequence to allow major renovation work, including selective demolition, to occur in phases. Existing school program will be accommodated in swing space – in some cases within the building and in others in trailers. It is anticipated that the work would occur in five swing phases.

The Renovation scheme architectural scope of work items will include:

Existing building areas to remain (Main Academic Wing, partial Southern Academic Wing, auxiliary gym and auditorium):

- Most interior partitions, doors and frames, ceilings and floors will be new.
- Maintain and patch existing terrazzo floors in limited areas where retained.
- Replace roof system.
- Retrofit exterior walls of Main Academic Wing and Southern Academic Wing with new, high-performance exterior wall cladding system.
- Existing floor areas of Main and South Academic Wing will be reconfigured with new walls, stairs and floor openings.
- Existing interior walls and trim to remain are to be repaired, prepared and painted.
- All tile and wall base will be replaced.
- All ceiling tile and metal grid will be replaced.
- Areas of the roof will be stripped to roof deck and replaced.
- Exterior doors and frames will be replaced.
- All exterior windows will be replaced and supplemented with new openings to meet light and ventilation requirements.
- Interior doors will be replaced with new ADA compliant hardware.
- Classroom and office casework will be redesigned to meet EdSpec.
- Science lab casework and equipment will be redesigned to meet EdSpec.
- The exterior masonry at Auxiliary gym and Auditorium requires re-pointing.
- Masonry expansion joints will be resealed.
- Replace all lockers to meet EdSpec.

New Addition building areas (Lobby, Administration, Music, Art, Media Center, Cafeteria/ Food Service and Main Gymnasium):

- New building that will meet all Educational Specifications requirements.
- New high-performance exterior wall cladding system
- Materials and equipment that will be designed to meet PGCPS Design Guidelines.
- All classrooms, offices, and common spaces that will have abundant daylight.
- Circulation that will be straightforward and well defined.
- New spaces that will comply with current code and accessibility requirements.
- A well-defined central entry will be provided.

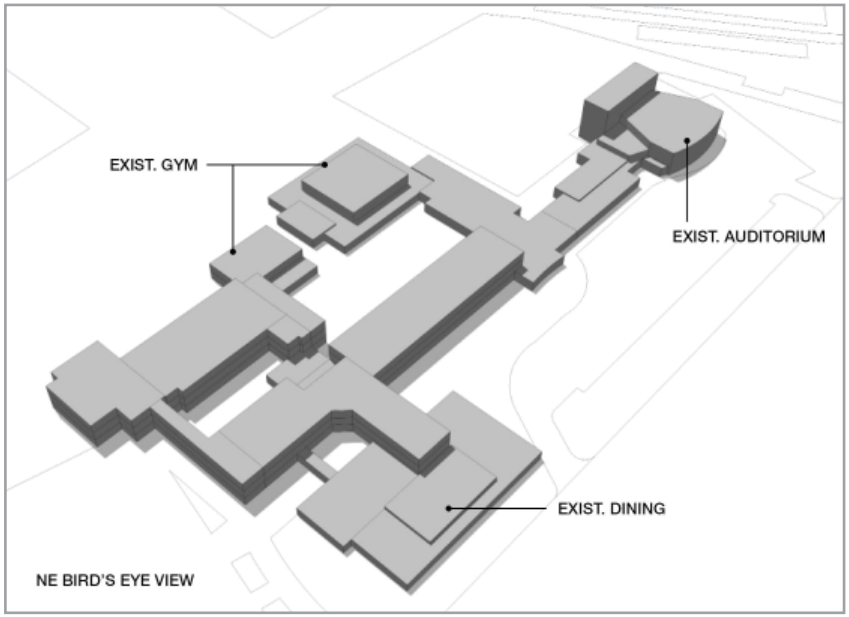
- All new construction and renovation will satisfy Prince George's County Public School requirement to utilize LEED Gold certification requirements as a metric for design.

Sustainability Strategies

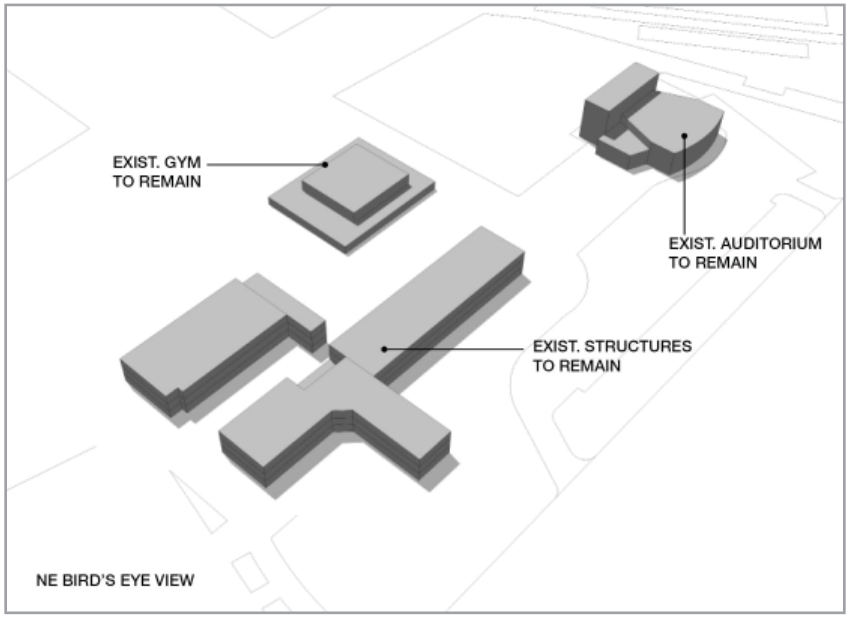
The Maximum Renovation scheme seeks to retain as much of the existing structure as practicable. Salvage and reuse of existing infrastructure is at the very heart of sustainability and is an effective way to reduce the overall embodied energy and site impact of the project. However, reuse and/or repurposing of the existing facility does present some limitations for the performance of the completed project. Following are some relevant examples:

- The orientation of the existing building is not ideal relative to daylight harvesting and solar heat gain.
- As an assemblage of long, thin, 2 - 3 story buildings separated by courtyards, the form of the building is not compact and has a high envelope to volume ratio. This generally increases the exposure to environmental factors that must be overcome with mechanical systems, thereby reducing energy efficiency. Although the operating and maintenance costs are relatively low for this scheme they would be even lower were it not for the extended floor plan and increased area of envelope.
- The existing building envelope will be improved to the extent possible within the limitations of the budget, but it is likely not practicable to match the performance characteristics of a new building envelope.
- The existing roof structure may not be able to support roof-top equipment and renewable energy systems. These systems will likely be limited to new roof areas.

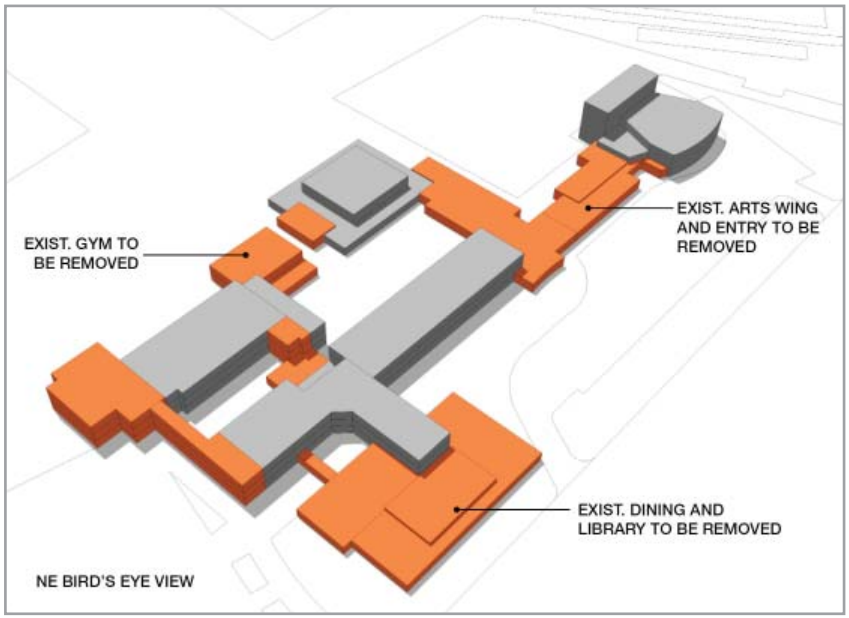
It is possible to achieve the LEED Gold Certification in the Maximum Renovation scheme, though it will be more challenging than with new construction. See the LEED scorecard. provided in the "Other Planning and Design Considerations" section of this report.



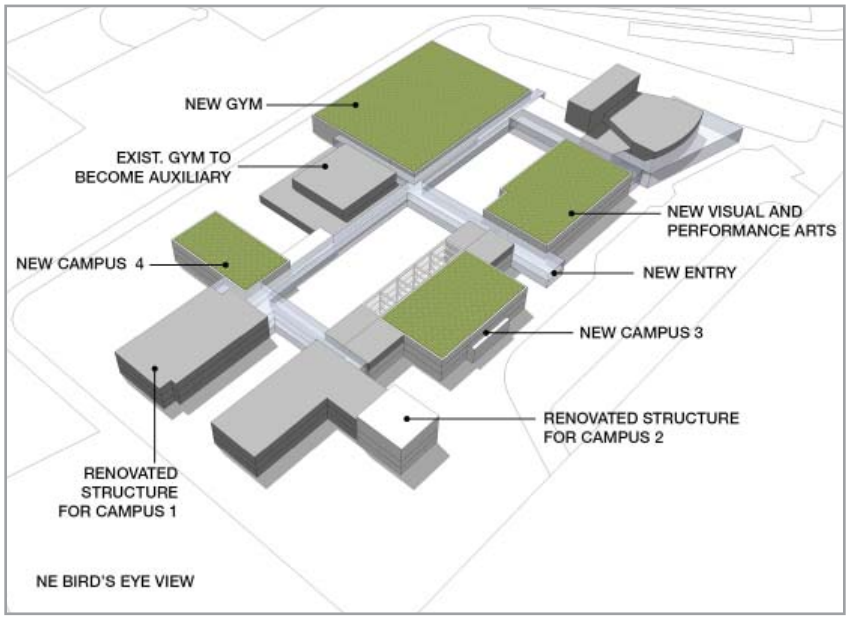
Northwest axonometric view of existing school



Axonometric view of existing school with demolition portions highlighted

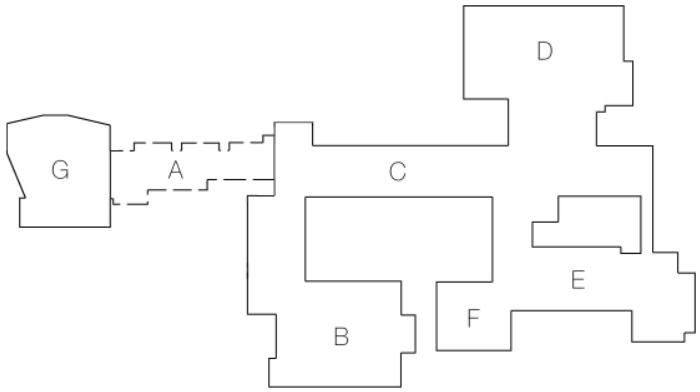


Axonometric view of existing school of the components that remain

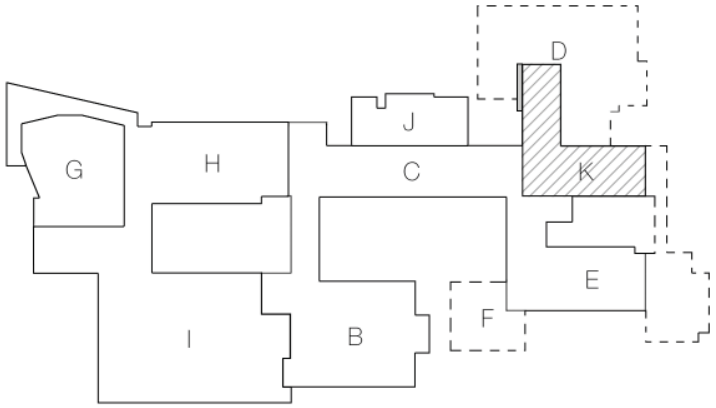


Axonometric view of renovated school with new additions/insertions

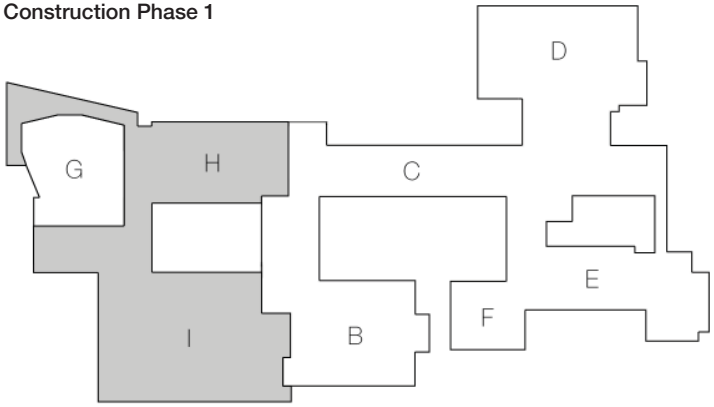
Proposed Phased Construction



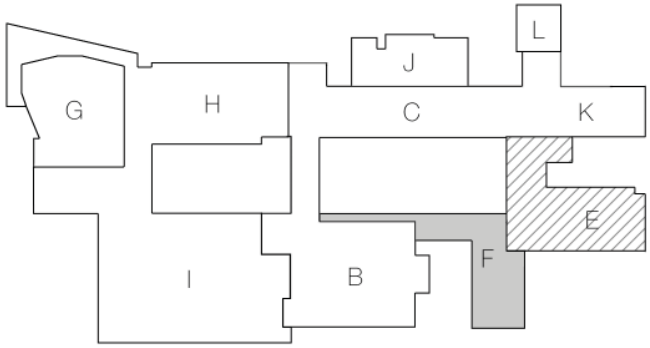
Construction Phase 1



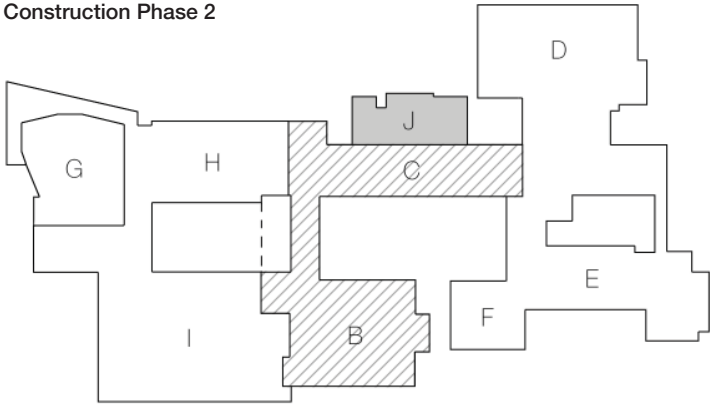
Construction Phase 4



Construction Phase 2



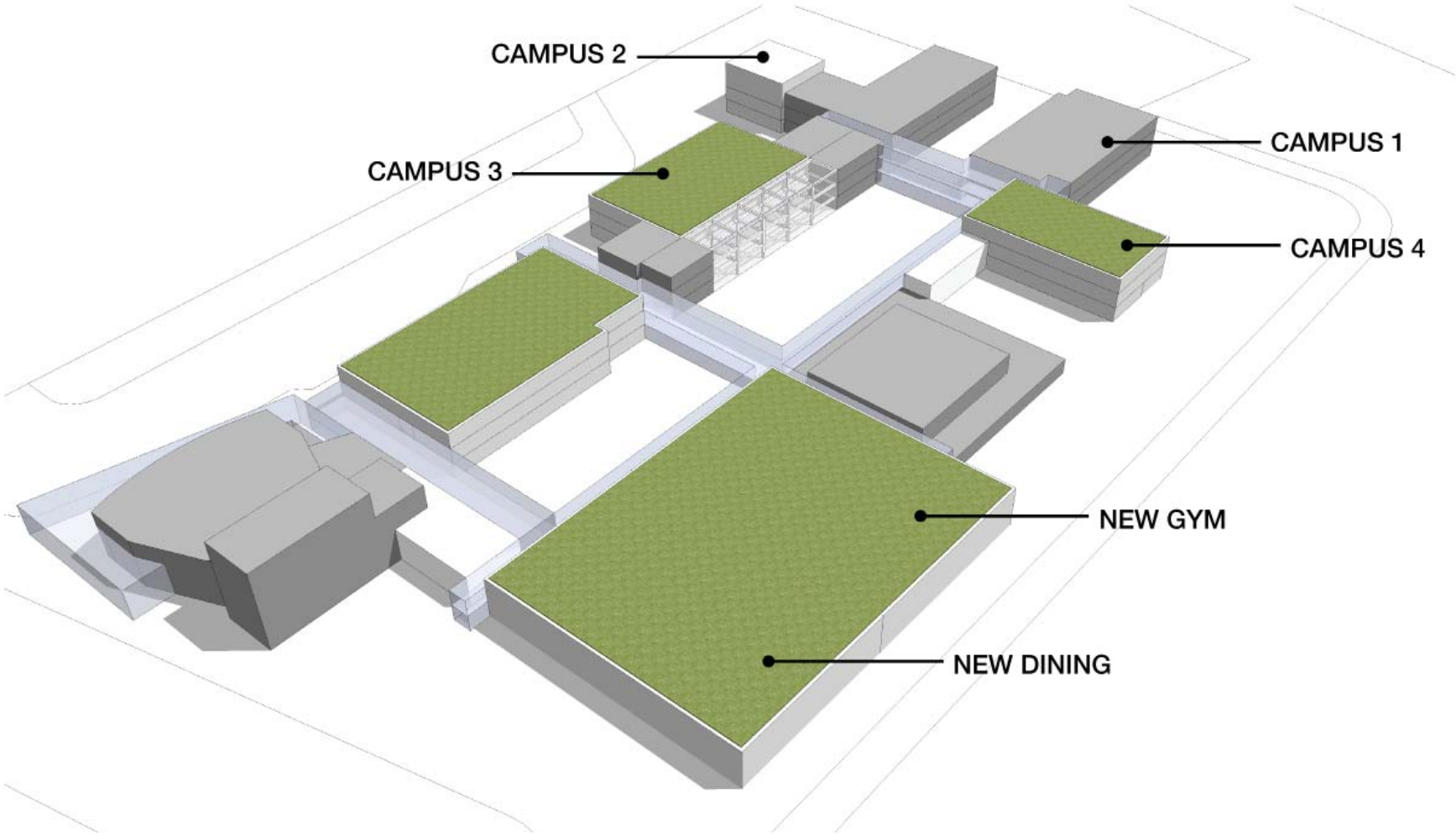
Construction Phase 5



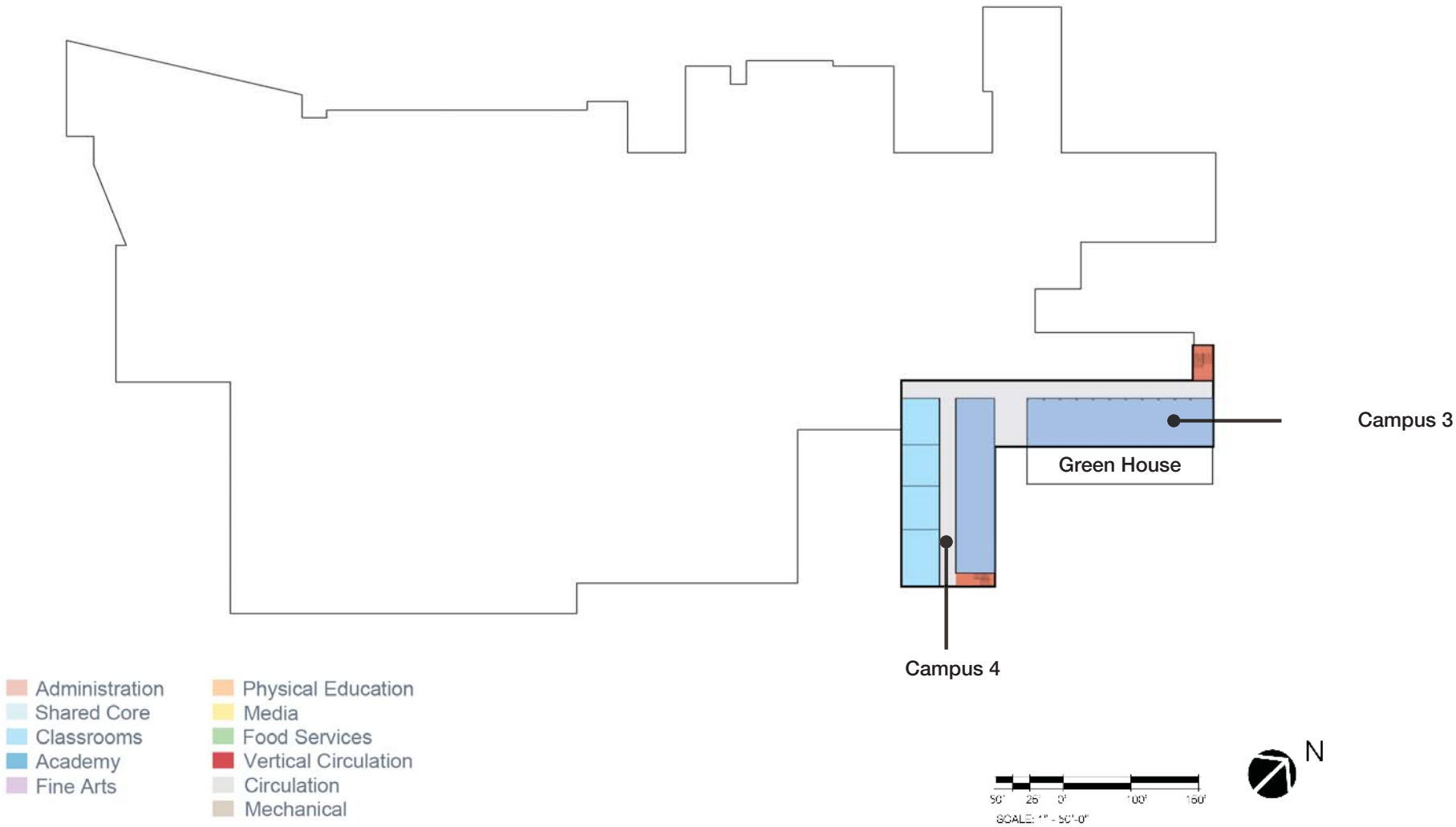
Construction Phase 3

Demolition
Renovation
New Construction

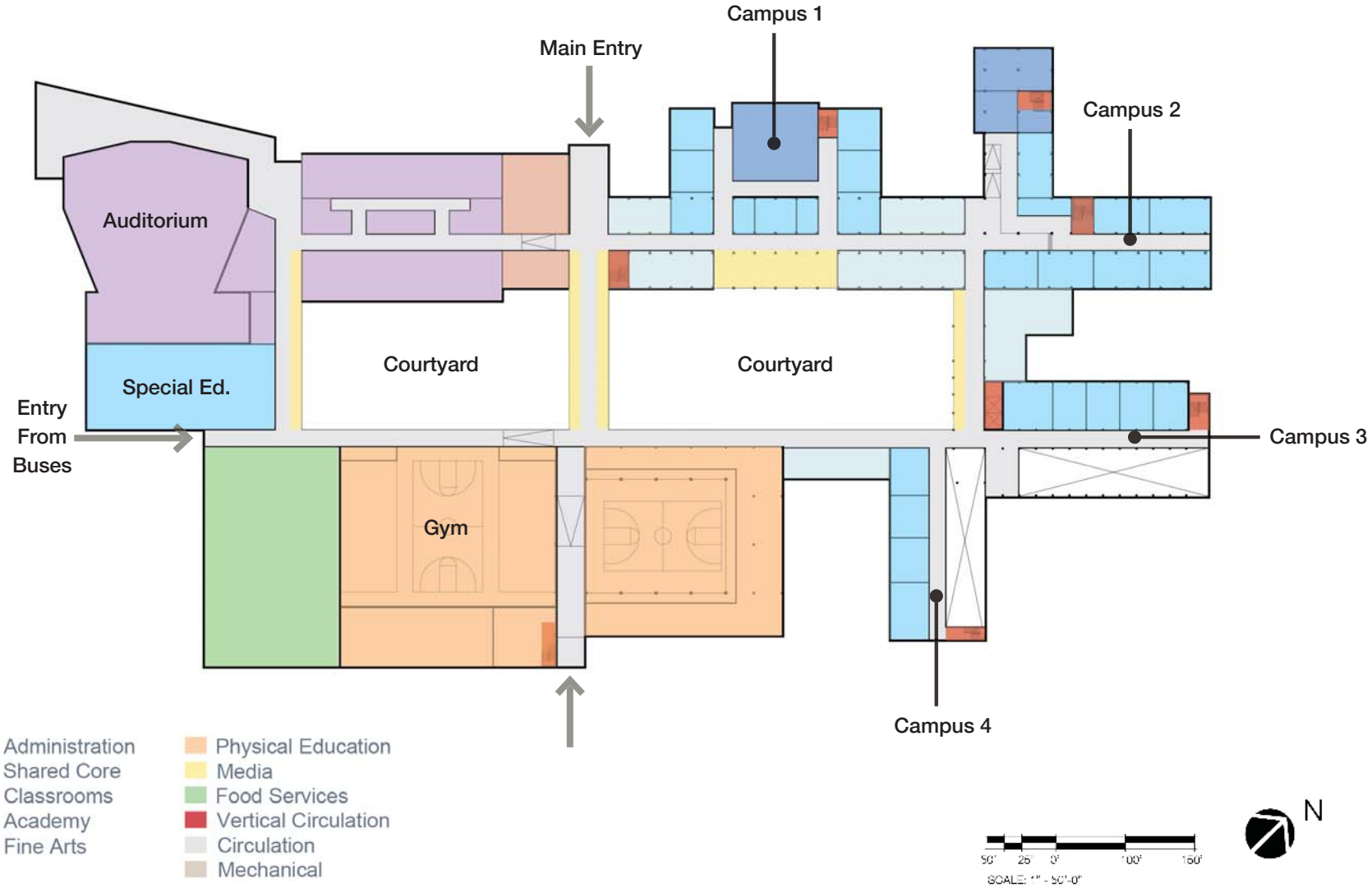
SHWGROUP



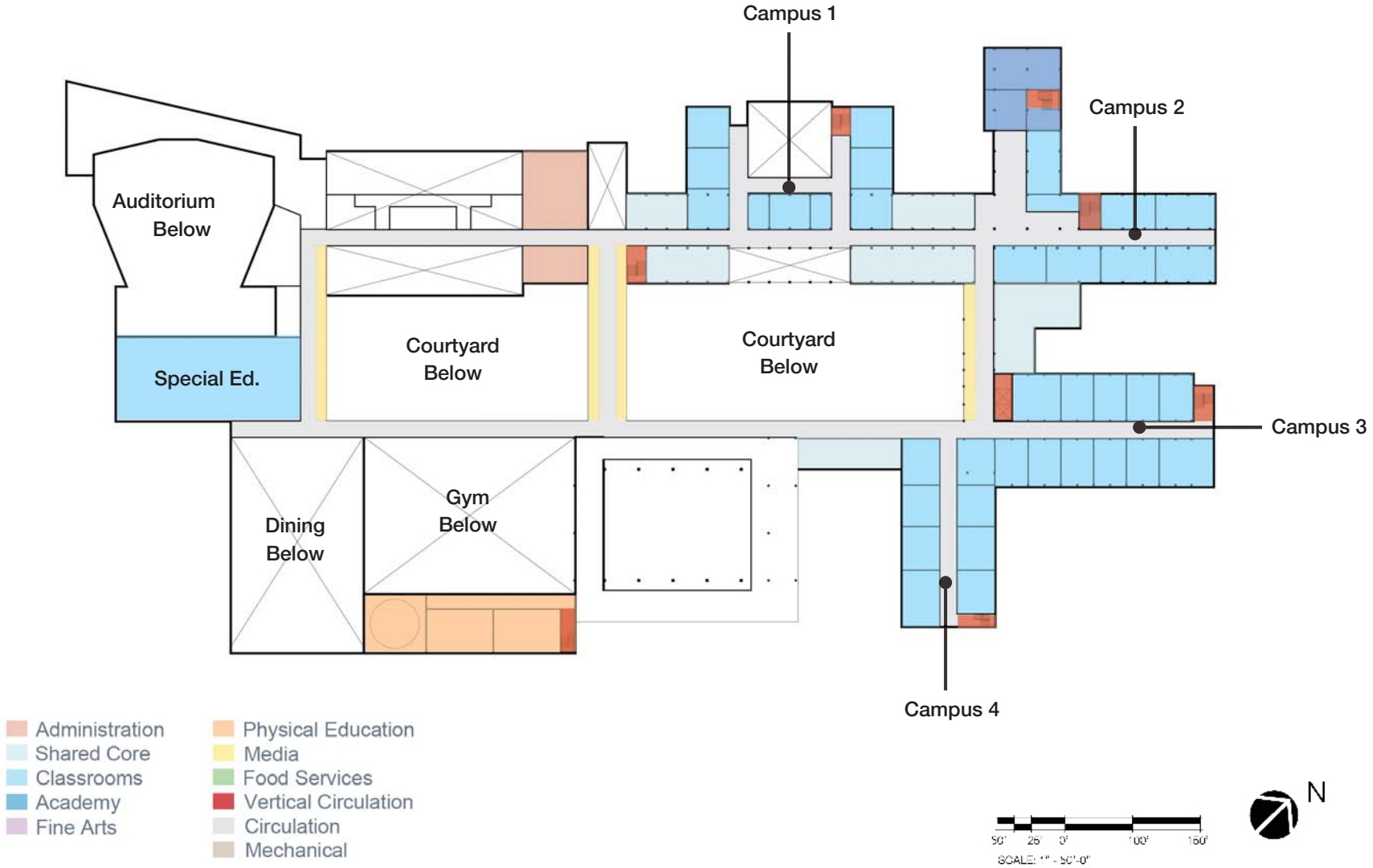
Southwest Axonometric View of renovated school with new additions/insertions



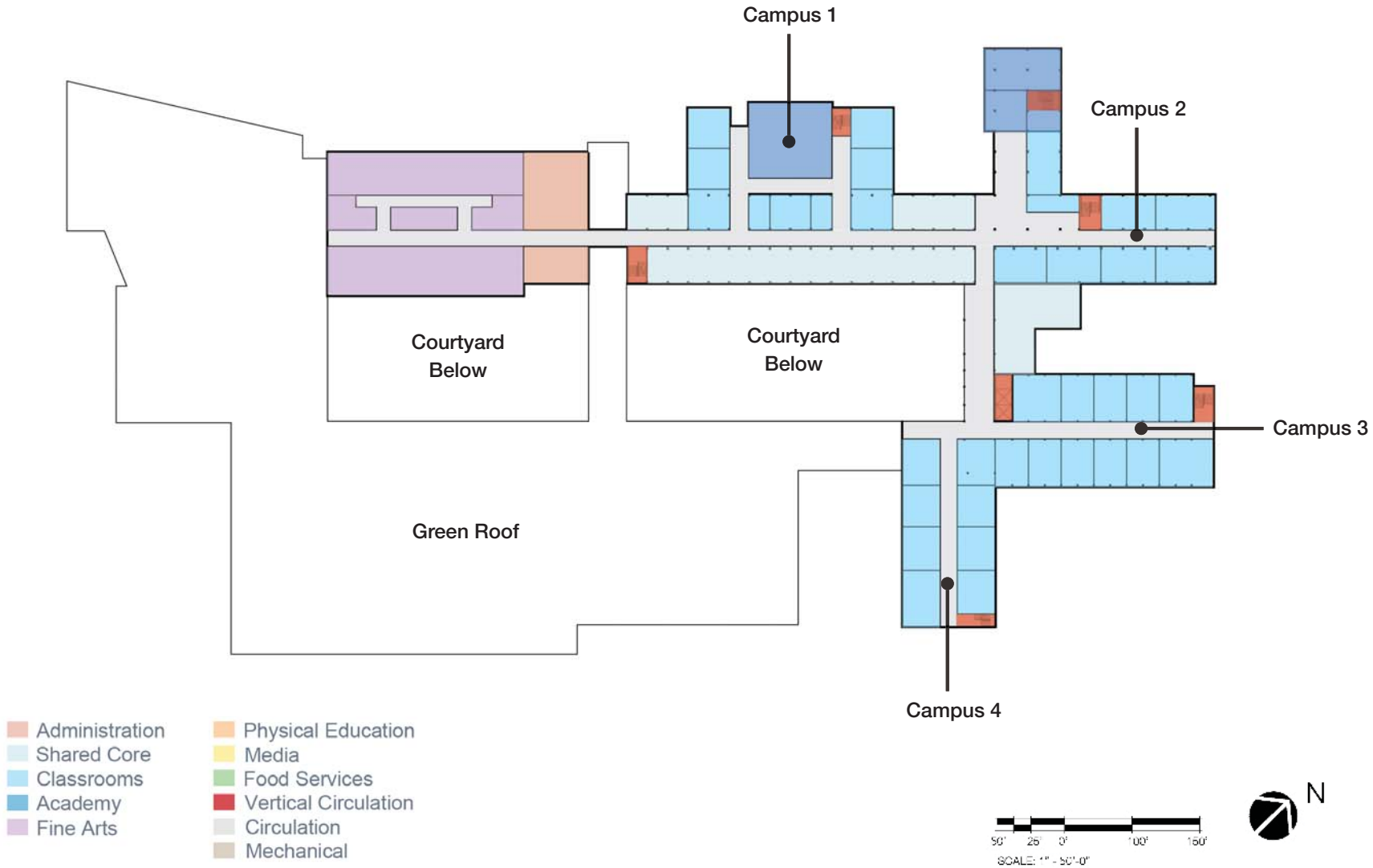
Renovation Scheme Lower Floor Plan



Renovation Scheme First Floor Plan



Renovation Scheme Second Floor Plan



Renovation Scheme Third Floor Plan

New Construction Scheme

The New Construction scheme approach fulfills the requirements of the Educational Specifications by providing an entirely new building on the existing site. The new building would be built in the area that is largely occupied currently by the football field. After the completion of construction the new school building would be occupied, the original school structure razed and the site developed including the new track and field. While there will be the same site logistics with availability of fields and parking during the construction period, phasing will be greatly managed.

As with the Max Renovation scheme the concept for a new construction approach focuses on the creation of the four campuses while allowing for future expansion of the school should it become necessary in the future. Two academic wings with two three-story campuses in each flank a central support space zone comprised of a new Auditorium, new arts spaces, new Cafeteria and new PE space in the form of a U shaped building that faces Powder Mill Road. A central recessed entry provides a protected arrival zone at the buildings main entrance for pedestrians and vehicular traffic. A bus drop off wraps the building at the west side and fully separates this traffic from the main entrance to the building. Each campus wing has a three story atrium at its center providing not only circulation but generous collaboration space and room to offer an open free flowing lunch service utilizing of food carts. A new track and football field, baseball and softball and practice fields per the Educational Specs are all provided with this scheme as well.

The New Construction scheme architectural scope of work items will include:

- New building that will meet all Educational Specifications requirements.
- New high-performance curtain wall system
- Materials and equipment that will be designed to meet PGCPS Design Guidelines.
- All classrooms, offices, and common spaces that will have abundant daylight.
- Circulation that will be straightforward and well defined.
- New spaces that will comply with current code and accessibility requirements.
- A well-defined central entry will be provided
- All new construction and renovation will satisfy Prince George's County Public School requirement to utilize LEED Gold certification requirements as a metric for design.
- A well-defined central entry will be provided.
- All new construction and renovation will satisfy Prince George's County Public School requirement to utilize LEED Gold certification requirements as a metric for design.

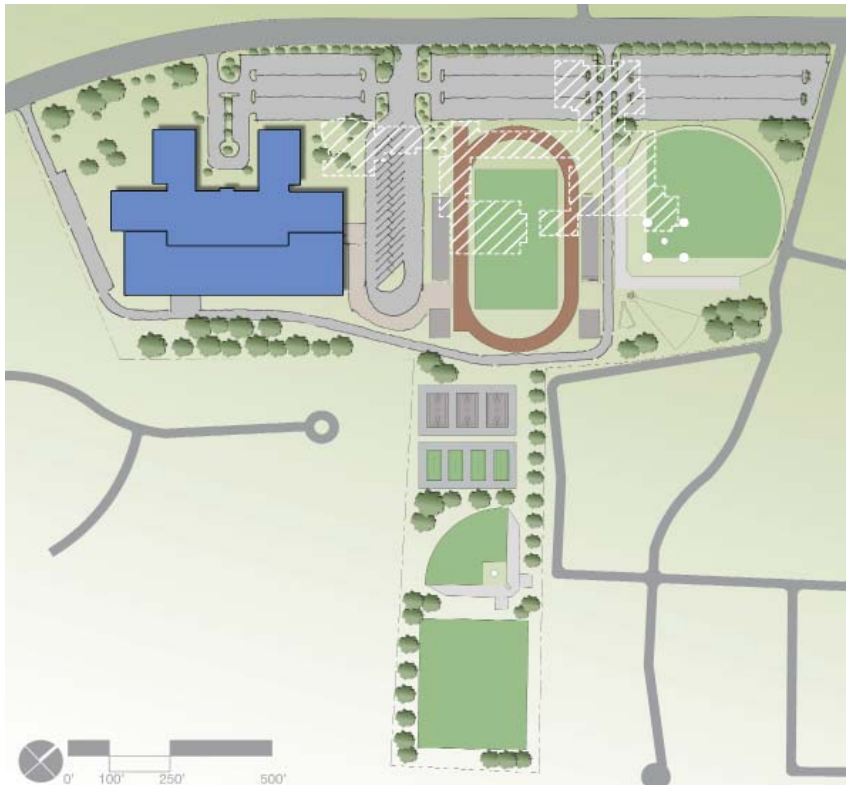
Sustainability Strategies

As the name implies, the New Construction scheme builds a new independent facility and then demolishes the existing building. While this abandons the resources invested in the existing facility and requires the disposal of large amounts of construction waste, it creates the opportunity for a facility designed specifically to current instructional needs and community uses. Further, a new facility will be designed to current best practices, reducing operations costs and improving the quality of the learning environment.

The New Construction scheme organizes the program into two major components – a two story wing that houses public functions including the gymnasiums, auditorium, and cafeteria, and a collection of three story campuses connected by shared program.

The building orientation responds to the public street and is therefore not ideally oriented for solar orientation. Daylight and solar gain will be managed through the careful design of the building envelope and solar shading devices.

The large low slope roof over the two story volume offers a potential area for large scale renewable energy systems. Further, daylight harvesting devices can be integrated into this roof to top-light to the large volume spaces below. While the PV array could be quite significant, this area is not likely enough to offset the energy use of the high school. Additional generation would

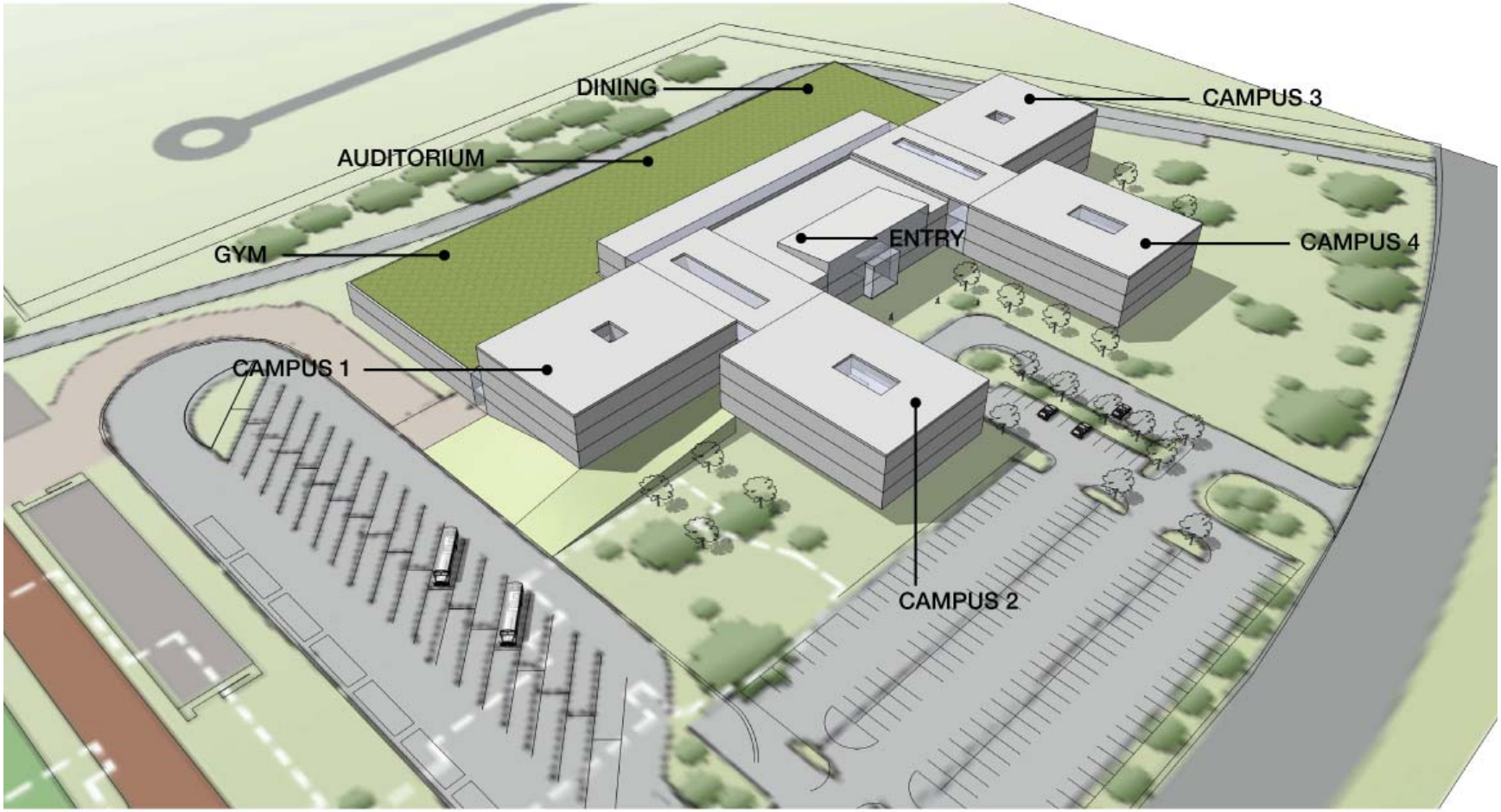


Proposed New Construction site plan showing existing building footprint in white

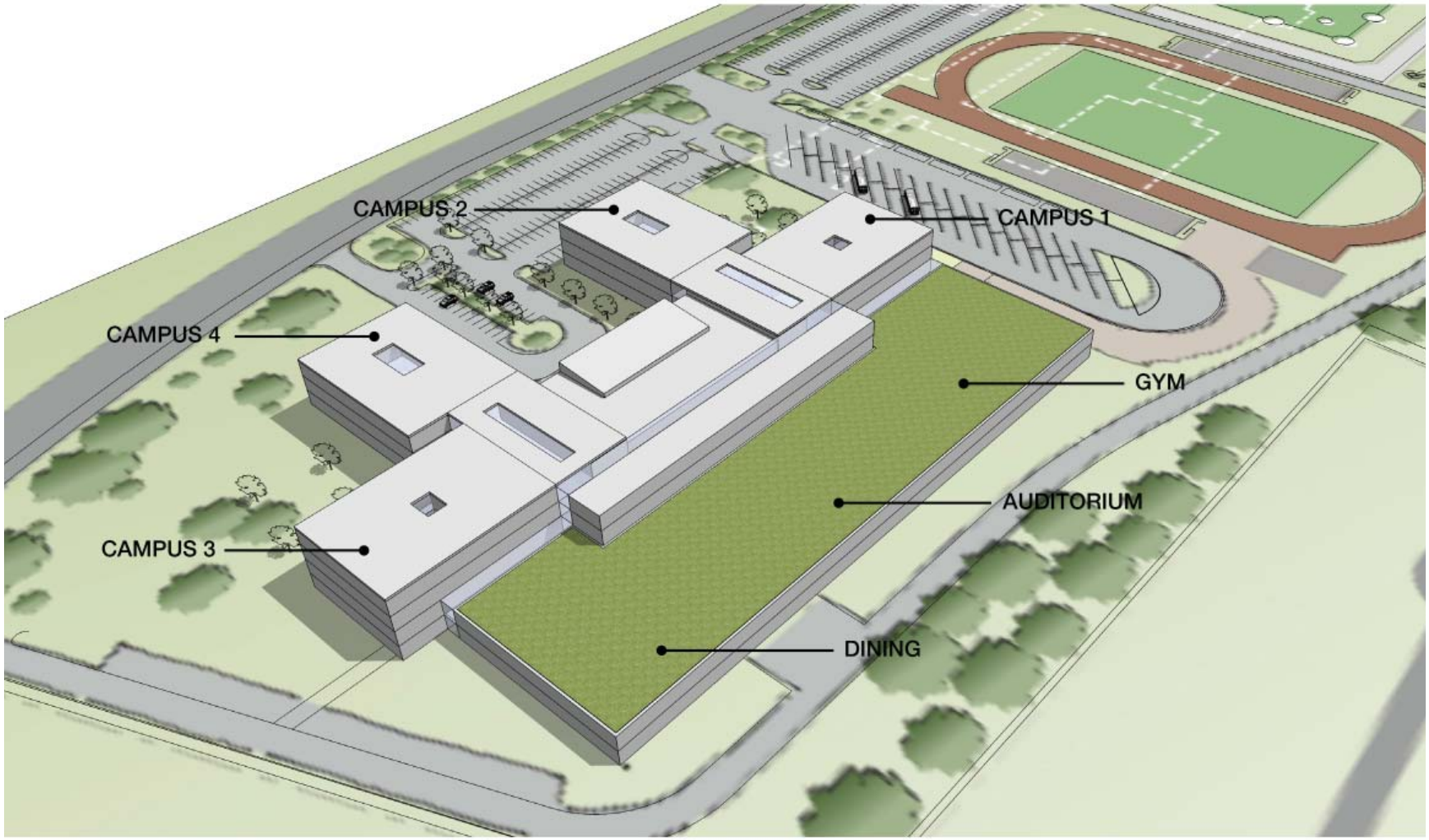
Proposed New Construction site plan

the learning environment, excellent ground level access and outdoor learning opportunities for each campus. However, this also increases the envelope to volume ratio, which, in turn, increases the exposure to environmental factors that must be overcome with mechanical systems, thereby reducing efficiency.

LEED Gold certification is achievable with the New Construction scheme. LEED Platinum certification is possible. See the LEED scorecard. provided in the “Other Planning and Design Considerations” section of this report.

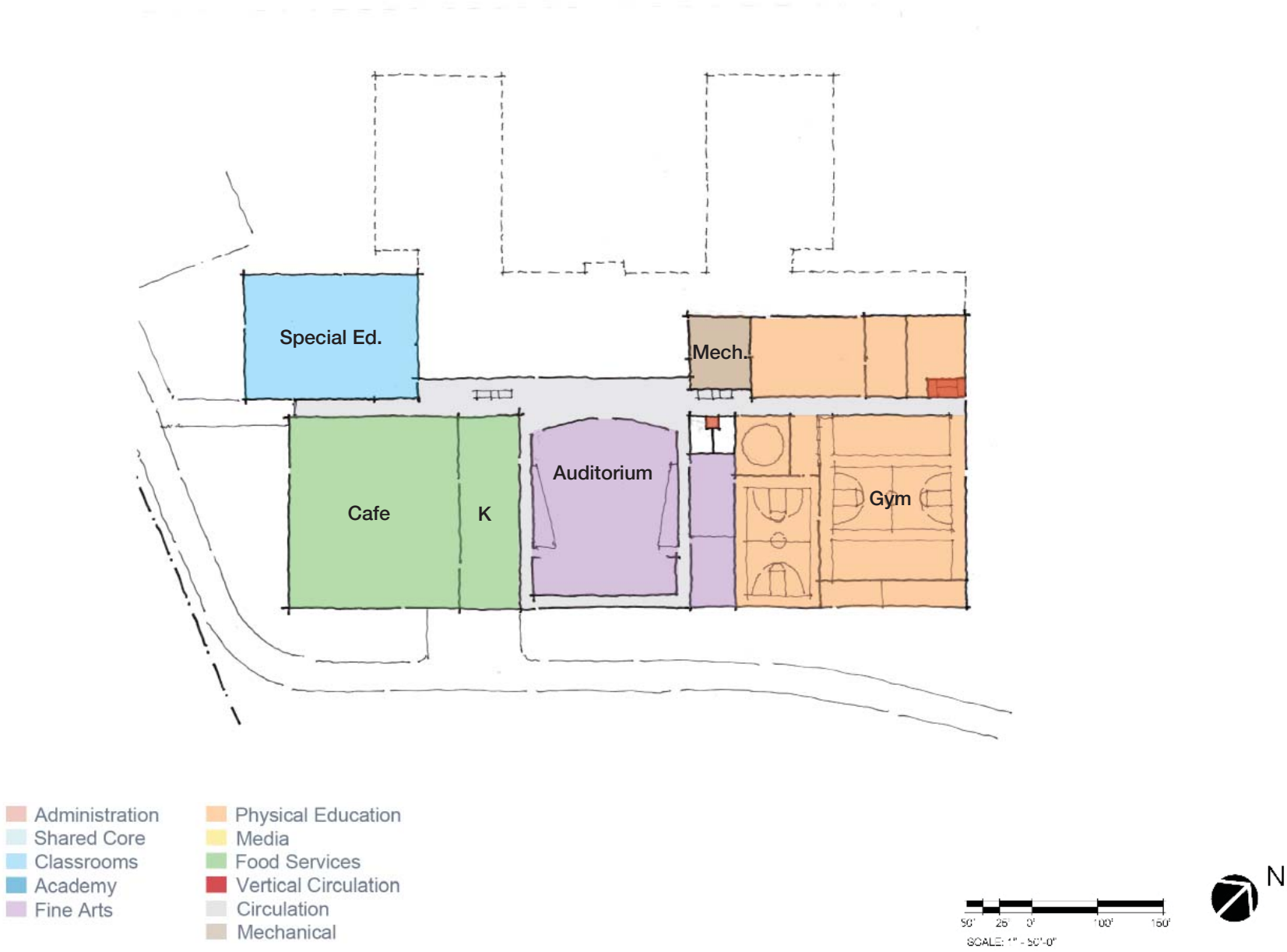


NE BIRD'S EYE VIEW

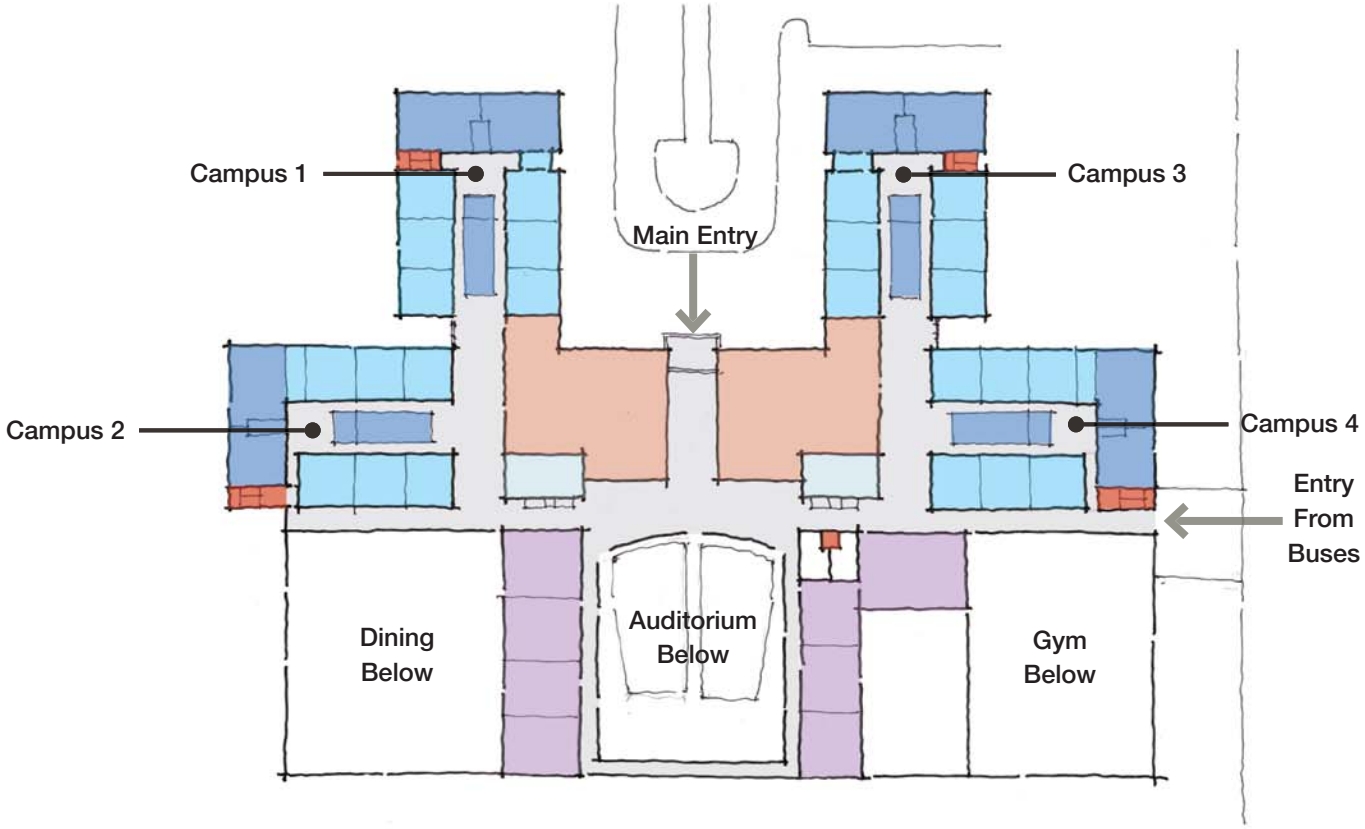


SW BIRD'S EYE VIEW

b. New Construction Scheme



New Construction Scheme Lower Floor Plan

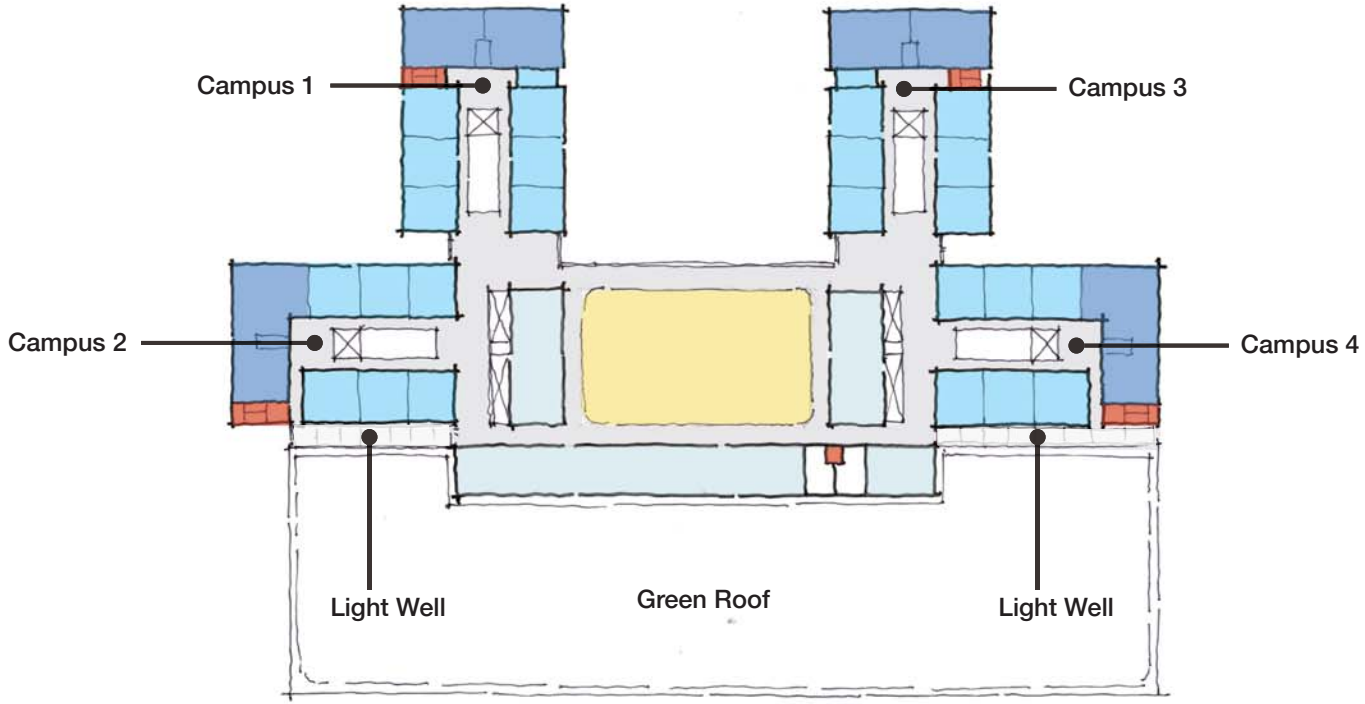


Administration
Shared Core
Classrooms
Academy
Fine Arts
Physical Education
Media
Food Services
Vertical Circulation
Circulation
Mechanical

N

SCALE: 1" = 50'-0"

New Construction Scheme First Floor Plan



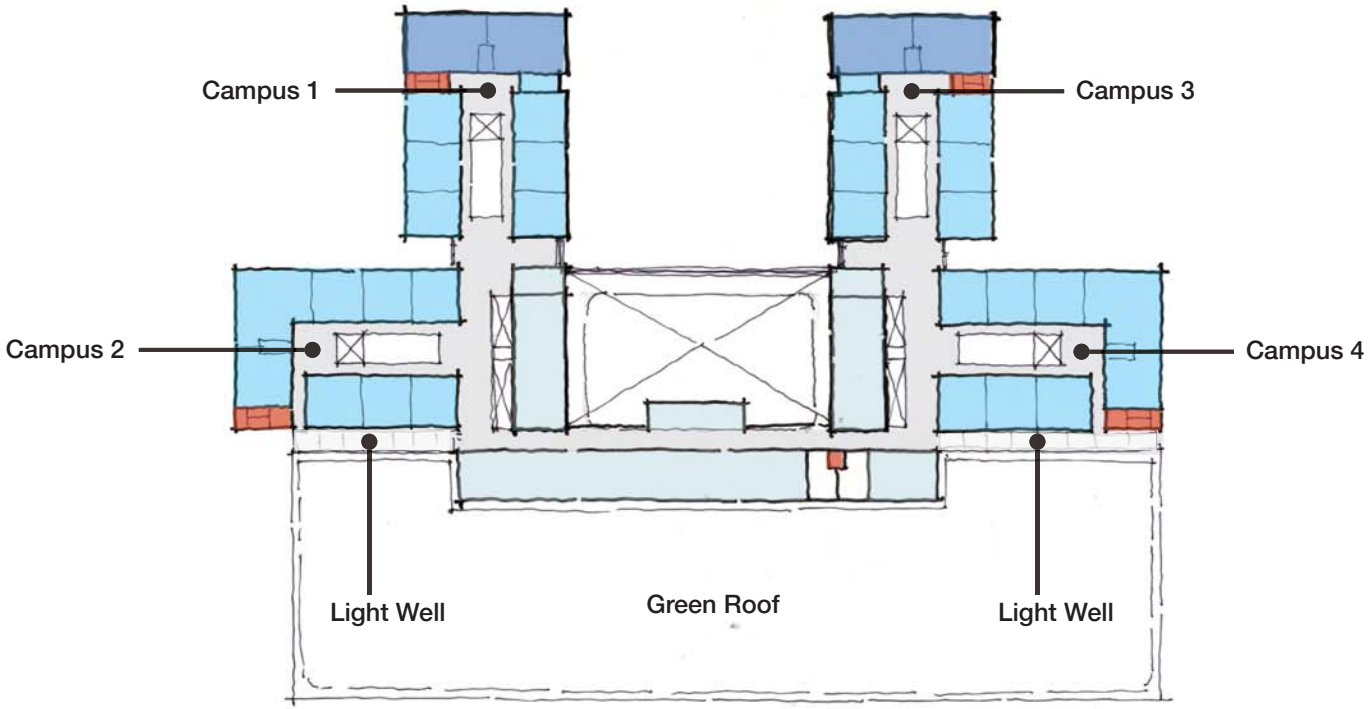
Administration
Shared Core
Classrooms
Academy
Fine Arts
Physical Education
Media
Food Services
Vertical Circulation
Circulation
Mechanical

50' 25' 0' 100' 150'
SCALE: 1" = 50'-0"

N

New Construction Scheme Second Floor Plan

SHWGROUP



- Administration
- Shared Core
- Classrooms
- Academy
- Fine Arts
- Physical Education
- Media
- Food Services
- Vertical Circulation
- Circulation
- Mechanical

N

50' 25' 0' 100' 150'

SCALE: 1" = 50'-0"

New Construction Scheme Third Floor Plan

Partial Reuse (Hybrid) Scheme

A hybrid of new construction and renovation balances the retention of existing features, i.e. the existing Auditorium, with providing a new building. All other aspects of the Educational Specifications are met by the new construction – Core Academics, Cafeteria, Media Center, PE spaces, etc. Although also a U-shaped building the new construction scheme campuses are provided in two towers of one campus stacked over another on one side of the wings that flanks the central portion of the building. The stacking of campuses provides the added benefit of flexibility for campus expansion and contraction in the future. Campuses can then be easily altered to become full floor campuses rather than two over two if needed. The benefit of locating the academic spaces within one wing is that academic spaces are concentrated together and are easily served by central shared academic core spaces. As a north facing U-shaped building siting is similar to the New Construction scheme and the site features and amenities are identical.

The Partial Reuse scheme architectural scope of work items will include: New Addition building areas (Lobby, Administration, Music, Art, Media Center, Cafeteria/ Food Service and Main Gymnasium):

- New building that will meet all Educational Specifications requirements.
- New high-performance exterior wall cladding system
- Materials and equipment that will be designed to meet BCPS Design Guidelines.
- All classrooms, offices, and common spaces that will have abundant daylight.
- Circulation that will be straightforward and well defined.
- New spaces that will comply with current code and accessibility requirements.
- A well-defined central entry will be provided.
- All new construction and renovation will satisfy Prince George's County Public School requirement to utilize LEED Gold certification requirements as a metric for design.

Sustainabilty Strategies

The Partial Reuse scheme may offer the best combination of sustainable design strategies – reuse of key facilities, compact building form, and improved solar orientation. The Partial Reuse scheme preserves and renovates the existing auditorium, a facility that is valued by the school community. The existing auditorium is absorbed into a new two-story arts and athletics wing that forms one side of the school. The four campuses form the other side of the school and are stacked in two 4-story towers oriented to optimize daylight harvesting and views. The "heart" of the school is a two-story volume containing the administration, media center, and cafeteria.

The large low slope roof over the two story arts and athletics wing offers a potential area for large scale renewable energy systems. Further, daylight harvesting devices can be integrated into this roof to top-light to the large volume spaces below.

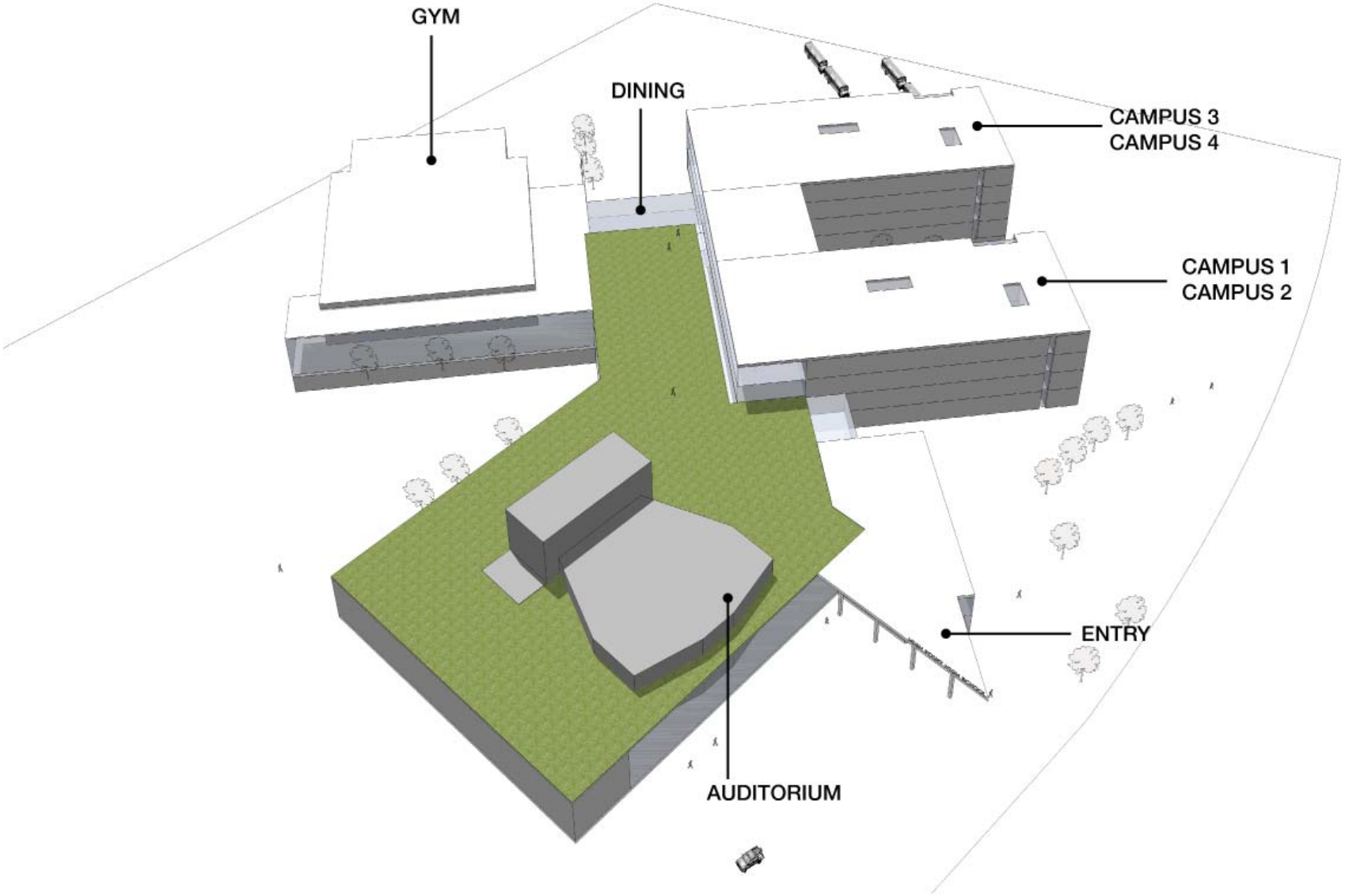
Visible from the adjacent campus towers, the roof above the administration, media center, and cafeteria is an excellent location for a vegetated roof. This strategy has multiple benefits including aesthetics, extended roof life, improved acoustics, storm water management, habitat and opportunities for outdoor learning. Daylight harvesting devices can also be integrated into this roof to top-light to the large volume spaces below.

The compact four story campus towers have a low envelope to volume ratio and are oriented to take advantage of daylight harvesting and passive solar energy. This will improve efficiency and the quality of the learning environment. The roof and south-facing facades of these towers are additional opportunities for large scale renewable energy systems, increasing the possibility of achieving a net-zero energy facility.

LEED Gold certification is achievable with the Partial Reuse scheme. LEED Platinum certification is possible. See the LEED scorecard. provided in the "Other Planning and Design Considerations" section of this report.

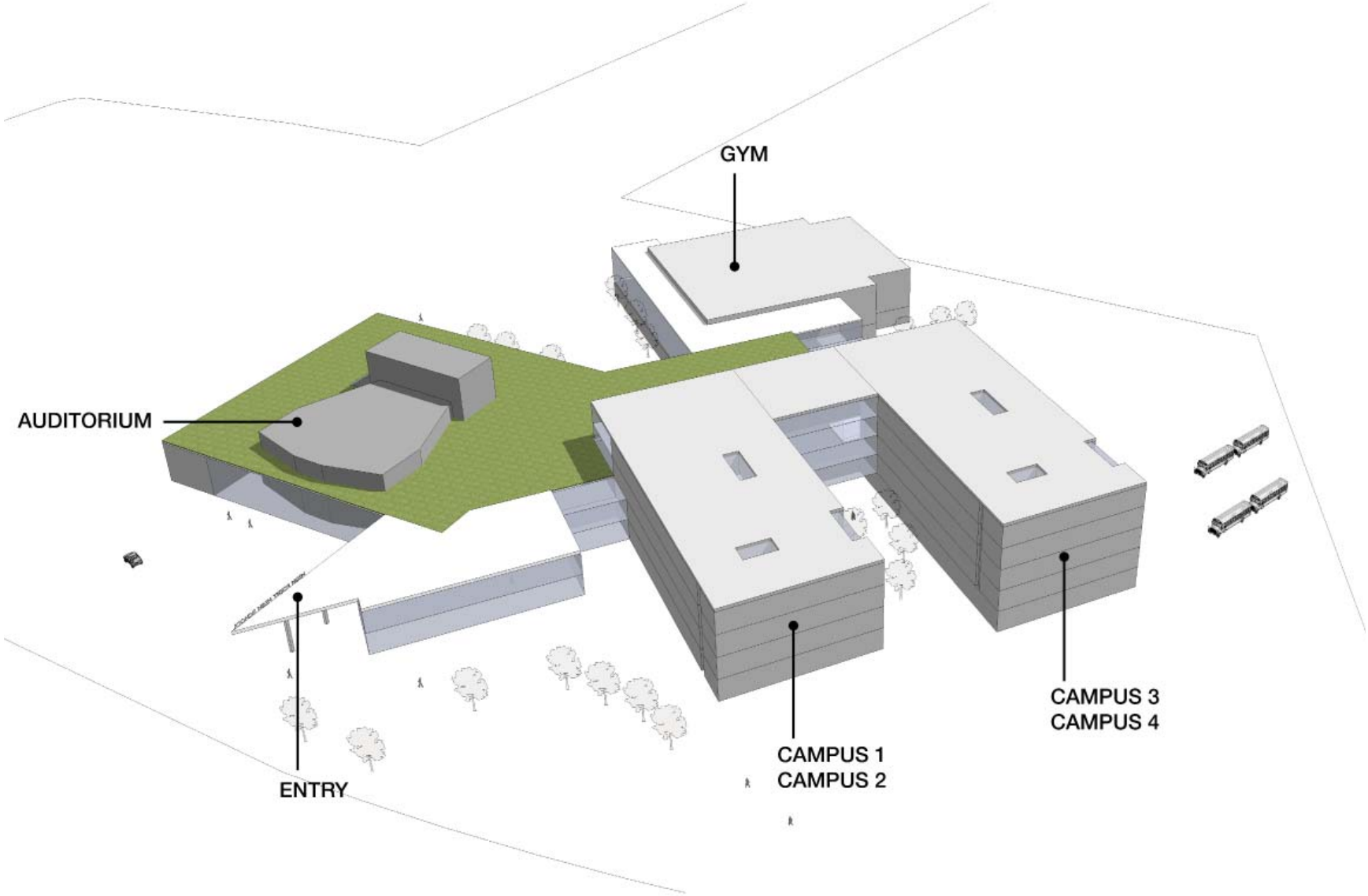
Proposed Partial Reuse site plan showing existing building footprint in white

Proposed Partial Reuse site plan

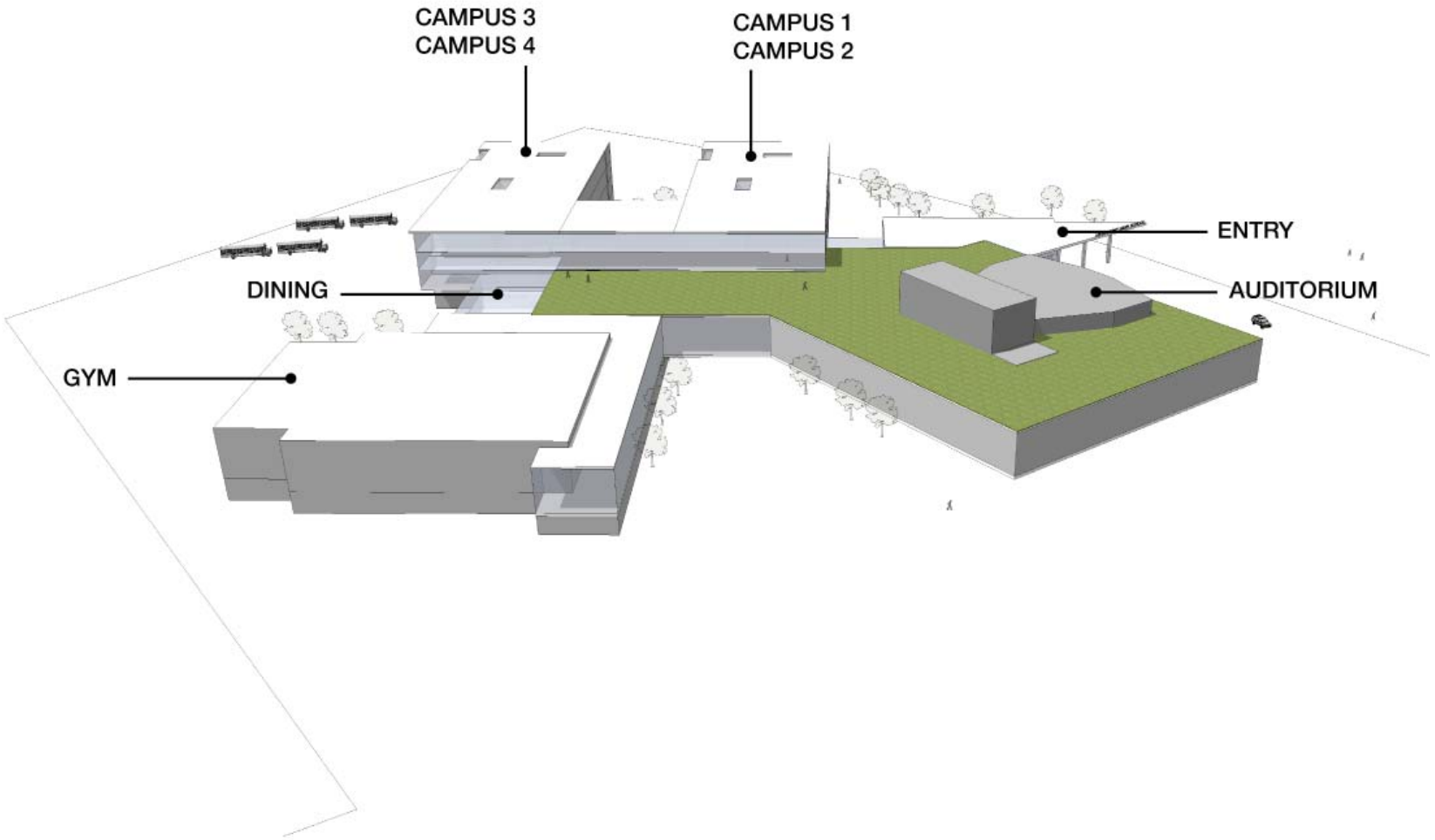


NE BIRD'S EYE VIEW

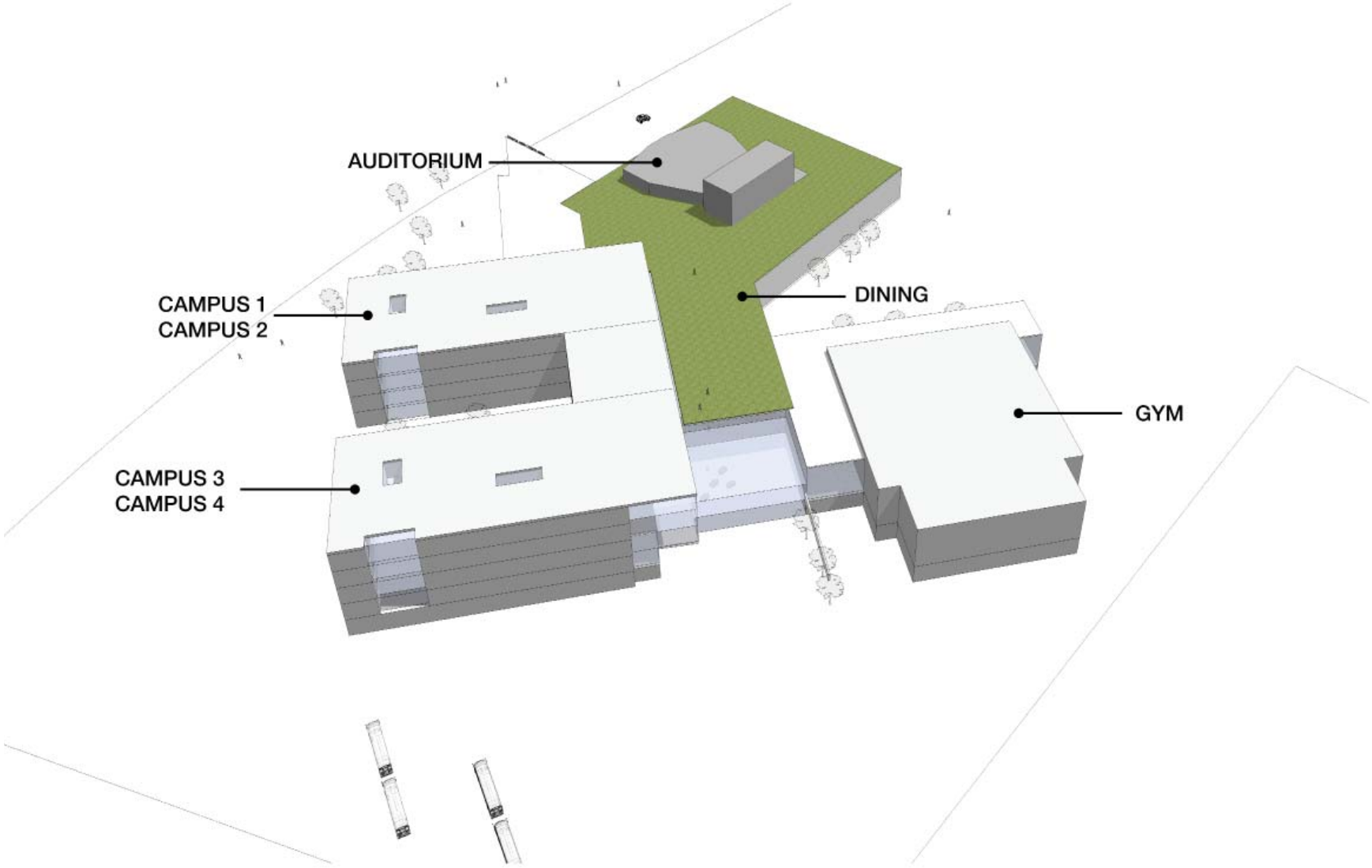
SHWGROUP



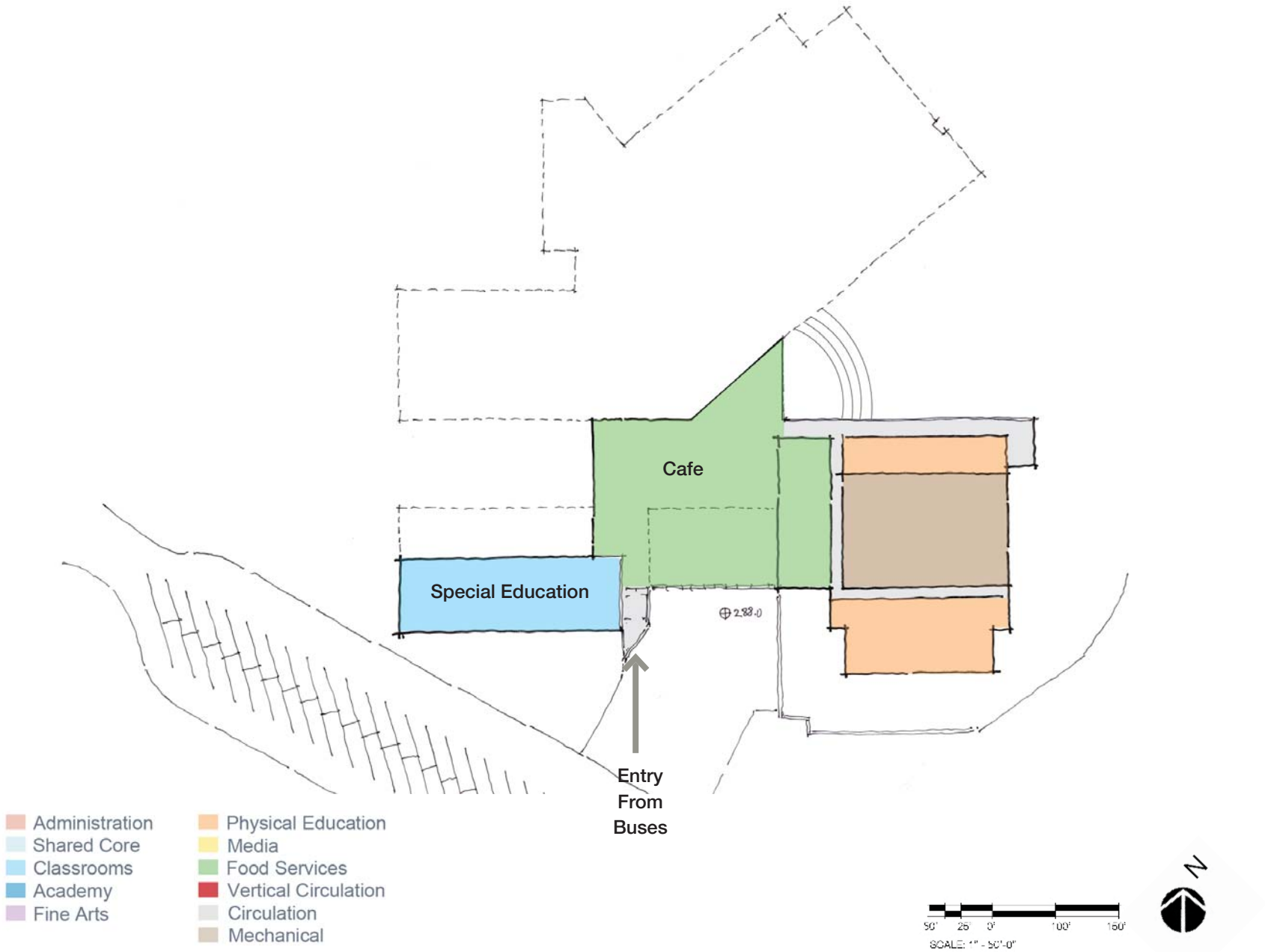
NW BIRD'S EYE VIEW



SE BIRD'S EYE VIEW



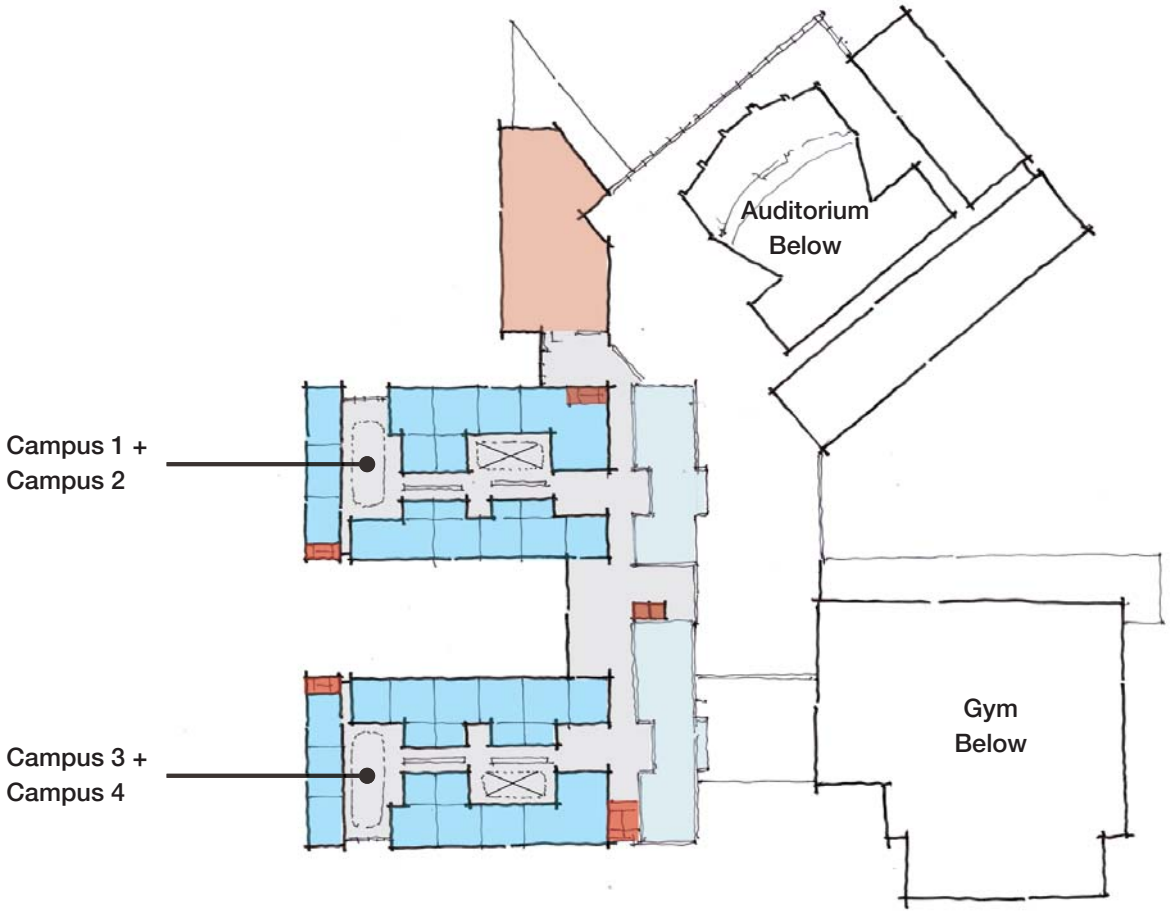
SW BIRD'S EYE VIEW



Partial Reuse Scheme Lower Floor Plan

SHWGROUP

Partial Reuse Scheme First Floor Plan



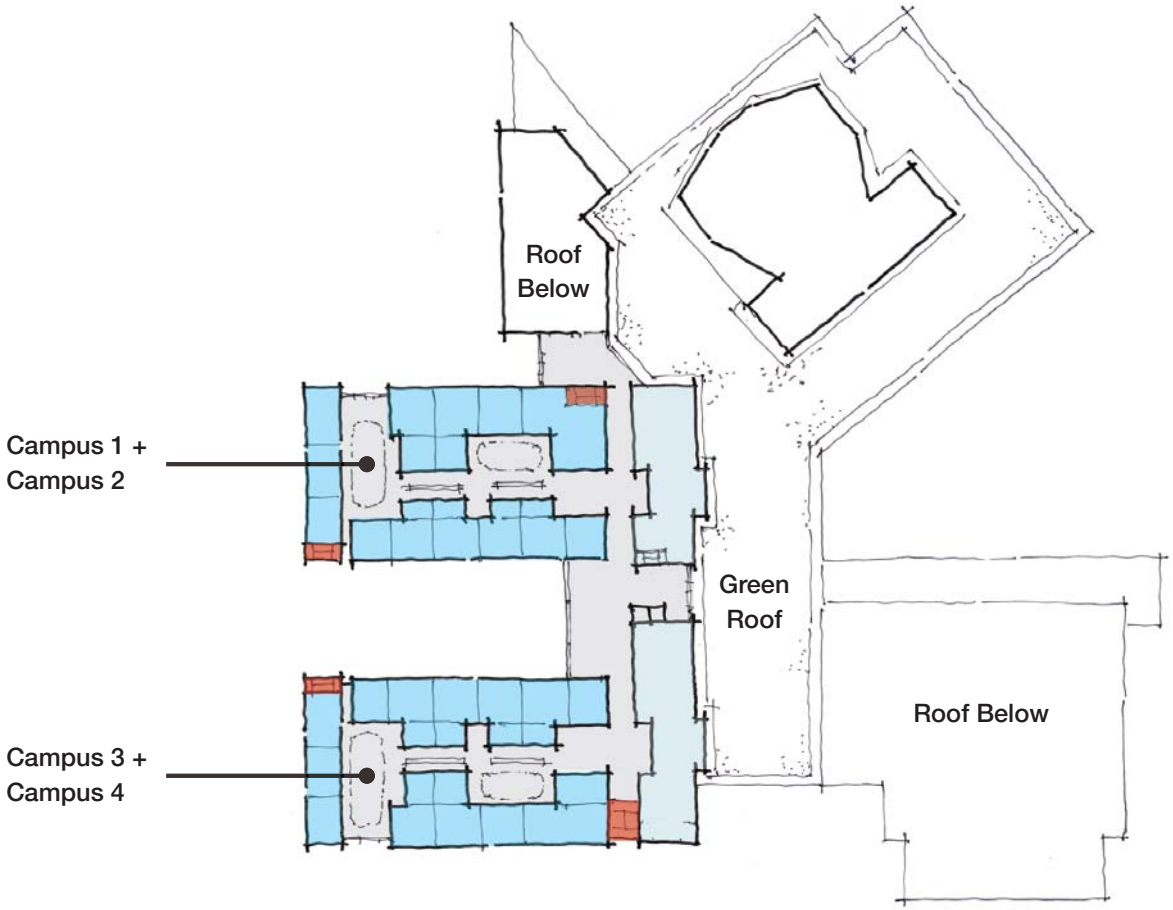
Administration
Shared Core
Classrooms
Academy
Fine Arts
Physical Education
Media
Food Services
Vertical Circulation
Circulation
Mechanical

50' 25' 0' 100' 150'
SCALE: 1" = 50'-0"

N

Partial Reuse Scheme Second Floor Plan

SHWGROUP

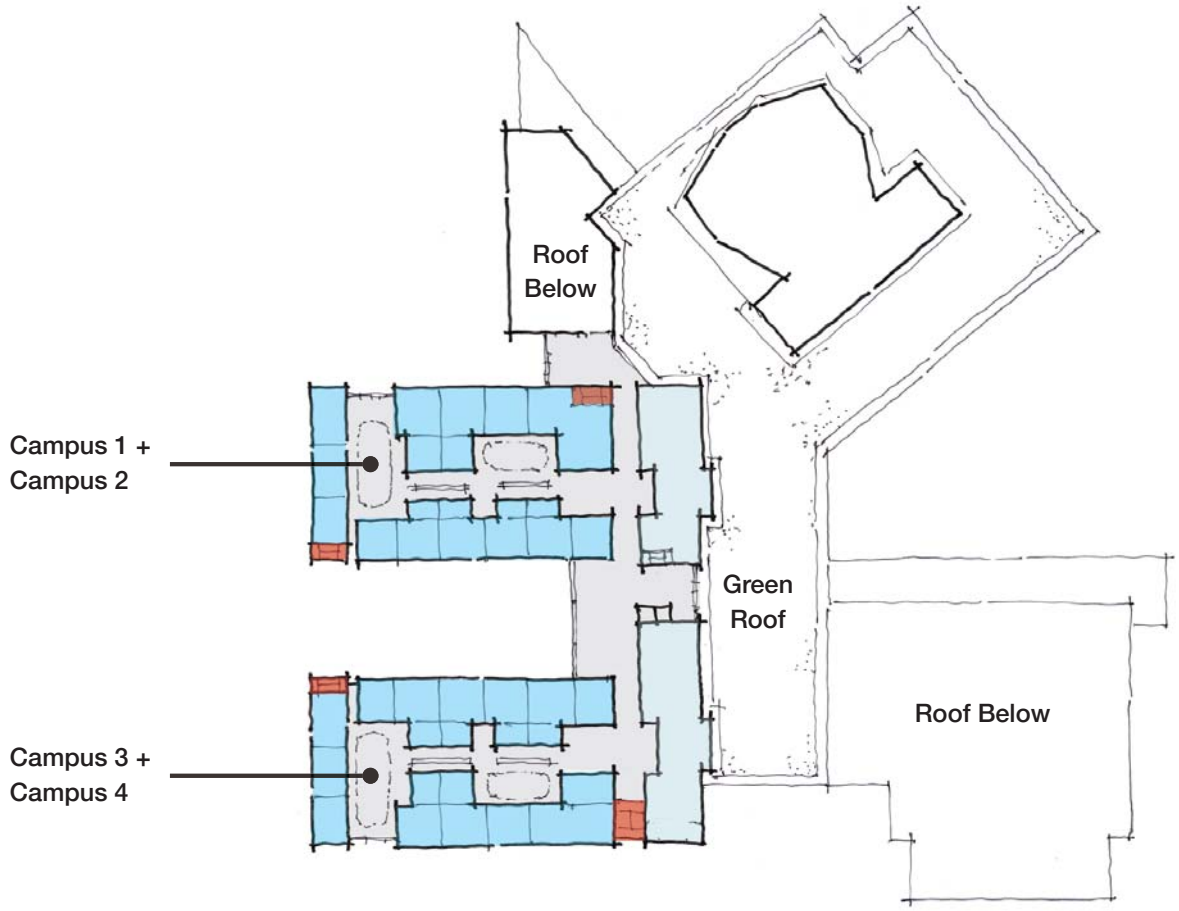


Administration
Shared Core
Classrooms
Academy
Fine Arts
Physical Education
Media
Food Services
Vertical Circulation
Circulation
Mechanical

50' 25' 0' 100' 150'
SCALE: 1" = 50'-0"

N

Partial Reuse Scheme Third Floor Plan



Administration
Shared Core
Classrooms
Academy
Fine Arts
Physical Education
Media
Food Services
Vertical Circulation
Circulation
Mechanical

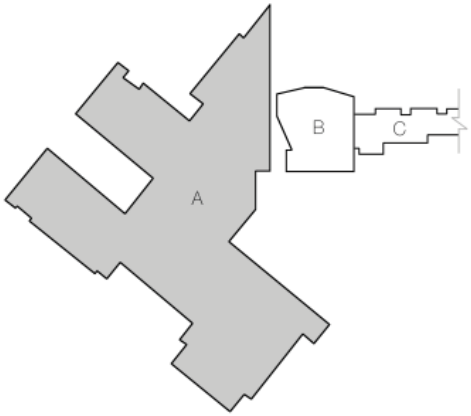
50' 25' 0' 100' 150'
SCALE: 1" = 50'-0"

N

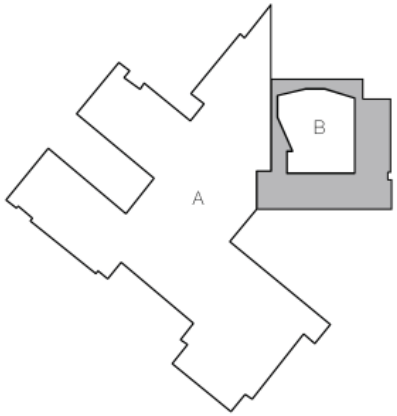
Partial Reuse Scheme Fourth Floor Plan

SHWGROUP

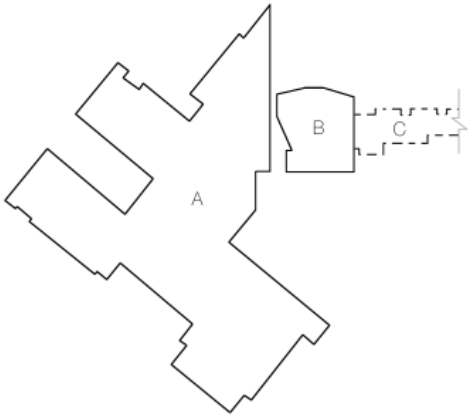
Phase 1



Phase 3



Phase 2



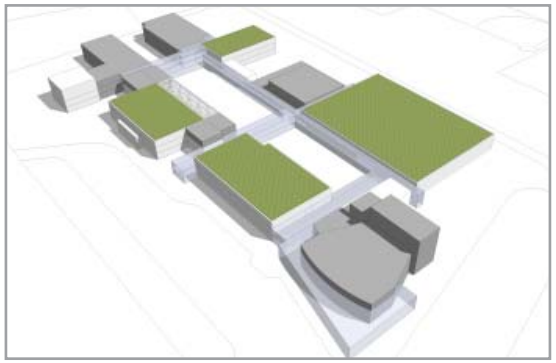
Demolition
Renovation
New Construction

Recommendations

Major/Minor Educational Program Deficiencies

Max Renovation Scheme

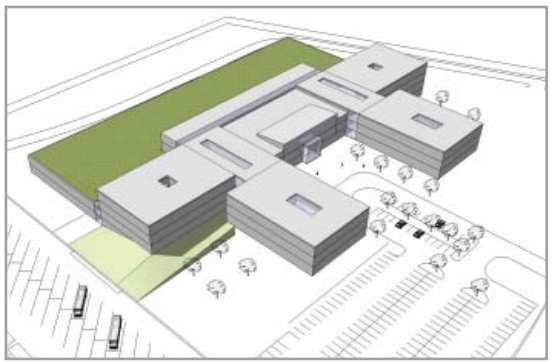
Area = 402,871 gsf



- Meets Ed Spec w/Exception of Baseball Field
- Longer Construction Period – 3.5 - 4 years
- Preserves 52% of existing building
- Adaptive Re-use a very sustainable approach
- Preserves superior interior materials
- Preserves Existing Auditorium
- New Gym, Cafeteria, Media Center at “Heart”
- New Arts Wing
- New Building Exterior
- Accessible Throughout
- Regional Special Ed at Grade/Bus Drop-off

New Construction Scheme

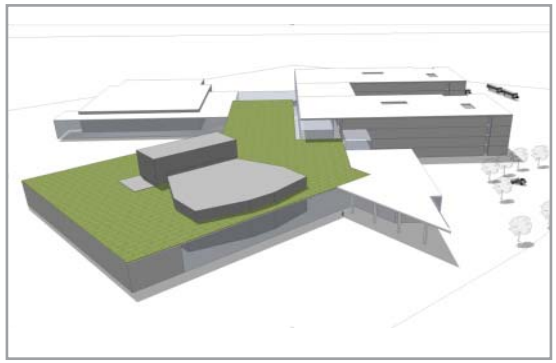
Area = 411,705 gsf



- Meets Ed Spec
- Shortest Construction Period – 2 years
- New Auditorium at “Heart” of School
- Separates Bus and Drop-Off Circulation
- New Media Center above front entrance
- Parking Consolidated
- Entry Frontal to Powder Mill Road
- Strong Site Lines to Rear of Site
- Academic Wings Separate from Entry Zone
- Regional Special Ed at Grade/Bus Drop-off

Partial Reuse (Hybrid) Scheme

Area = 394,013 gsf



- Meets Ed Spec
- Shorter Construction Period – 2.5 years
- Preserves Existing Auditorium
- Entry Pulled Close to Powder Mill Road
- Fields Abut Powder Mill Road
- Parking Located in Middle of Site
- Separates Bus and Drop-Off Circulation
- Academic Wing Separate from Entry Zone
- Student Dining/Media Center at “Heart” of School
- Optimal Solar Orientation for Academic Wings
- Regional Special Ed at Grade/Bus Drop-off

Recommendations

Architectural Design

The three schemes developed for this feasibility study represent the culmination of the numerous concepts explored for the re-use of the existing building and for this site. Those that you see here were found to best meet the project criteria: satisfy the programmatic needs of the full Ed Spec, solve existing problems inherent in the current site layout, ie. separation of co-mingled bus and pedestrian circulation, provide a site campus and building of appropriate configuration and character and, last, offer the highest and best use of the existing resources – land and building. Each scheme has been developed with the understanding that future expansion is highly likely and thought given to how that might be best achieved. In addition to expansion outside the building envelope considerable conversation has been devoted to the necessity for program expansion and contraction within the school, in particular within the academic portion of the school, where academy programs may fluctuate in size as career fields grow and shrink in demand.

The existing site offers certain inherent challenges and opportunities by virtue of its size, configuration, and location. Although large at 38.8 acres the site has street access from only one side along Powder Mill Road making it challenging to bring vehicular access to the rear of the T-shaped site into the leg of the T. The leg of the T is also constricted to the point that a regulation baseball field may not be accommodated there. The fields located there currently are both undersized per the Ed Spec. This restrictions means that the baseball field must be located at the portion of the site parallel to the main road and doing so places the athletic fields very close to the school building. Sites shown for the All New and Partial Reuse schemes both show a site layouts that feature and maximize this close proximity with stands adjacent to the school and locker rooms. This results in a dense site use that is more typically found on urban schools. By locating the athletic facilities at the middle of the site the fields are then able to exist at a mid-point elevation in the 3 story grade change that occurs across the site from north to south. This places the football and baseball field at an elevation that sits below Powder Mill Road shielding it slightly from view from the road. The Max Renovation scheme is restrictive enough in the use of the site by virtue of the re-use of the existing building that the regulation baseball field required by the Ed Spec cannot be accommodated on the site. The All New and Partial Reuse scheme offer far stronger site use schemes as a result.

The three building schemes may best be evaluated in terms of the projects goals pre-established by both Ed Spec and through program development for the new educational space. Those goals are as follows:

1. Provide a school entrance that is central, inviting and well defined
2. Provide public side activity and academic spaces that serve community needs – Media Center, Auditorium, etc.
3. Provide a “heart” to the school in the form of central gathering space
4. Locate an element of the program that is large enough to accommodate an arrival/dismissal student waiting area near the bus drop-off – 1300 students
5. Provide academic campuses that allow for distinct identities and control of circulation
6. Provide an academic environment that encourages inter-disciplinary collaboration
7. Integrate sustainability not only into the architecture but also into academic activities as living learning teaching tool - urban gardening – from farm to table, recycling/composting, etc.
8. Provide spaces that foster strong community involvement and corporate partnerships
9. Ensure a safe and accessible environment for all

In light of the goals referred to above reuse of the existing building is challenging. Much of the existing school is inaccessible due to level changes, parts of the school are remote from view/traffic and both lack of central gather space and distance between ends of the building make for a decentralized, sprawled school layout. Positive aspect of the existing school include the building/solar orientation parallel to Powder Mill Road, the existing Auditorium which is the largest in the county, and the quality of the existing

construction and level of finish on the existing school. With this in mind, the Max Renovation scheme utilizes the very best of the remaining school while supplementing with new construction to meet the Ed Spec requirements and does so in a manner that creates an inviting, inspiring 21st century learning environment. Parts of the school that do remain, academic wings in particular, do so in a transformed way with walls removed and a media center at the heart of the main east-west wing. Courtyards create an indoor/outdoor flow and mix of both education spaces and cafeteria. The resulting academic campuses offer an interesting array of varied spaces with no two campus layouts offering the same configuration. This variety is the strength of Max Renovation scheme whereas the other two schemes offer parity across campuses. Campus expansion in this scheme may be achieved by joining the two campuses at the South-east corner of the building.

The New Construction scheme features an all new construction approach which offers the opposite of the experience implied with the Max Renovation scheme. The building is constructed in from start to finish without interruption and no phasing required. As with many school modernization projects the football becomes the location for the new school and the use of the field is interrupted during construction. This inconvenience is offset by use of a local field in the interim and is generally more than compensated for with the introduction of the new school. The scheme condenses the building program into a highly efficient footprint and a smaller building envelope. The result of which is lower operating costs for energy saved in heating and cooling the building. Campuses in this case are separated each into its own tower. Circulation is separate to each and no cross traffic may occur. Campus identity is strong and collaboration space in the form of a shared atrium between two towers or campuses provides common area. The scheme also locates the campuses into a separate three story campus which could allow for future flexibility of common program and curriculum.

The Partial Reuse scheme offers a hybrid solution that incorporates only the existing auditorium. Through the course of this study we received clear feedback from the school leadership that the existing auditorium is highly functional, sought after and that replacement would waste resources. The decision to do so became clear when an early study of replacement costs yielded an estimate of roughly six million dollars to demolish the existing and construct a new Auditorium. Renovation of the existing Auditorium will also have costs associated to create accessible seating, refurbish seating and bring A/V equipment up to date but reuse does represent signficant savings.

Although the Partial Reuse scheme also fronts onto Powder Mill Road the design favors a more urban response to the main road by locating the entry in a readily visible location just at the rear of the front yard setback. The building location in this scheme results in a very efficient use of the site and grade change as the cafeteria/foodservice space sits at the rear of the building and daylights at a lower level. The result is that a main atrium space at the heart of the building just beyond the entry offers a balcony that looks over the cafeteria. The media center too fronts onto this atrium space creating a lively building core. Lastly the academic configuration for this building is that of a two story campus stacked over another two story campus. Two towers each provide this configuration and the result is the provision of twin academic towers – two campuses with grade access and two with rooftop outdoor space access. Rooftop greenhouse and outdoor sitting space/green roof supplement the upper campuses academic space.

It has been jointly determined by the Architects and the Planning Committee that the Partial Reuse scheme offers what is clearly the best solution in all that has been studied. A dense use of the site, athletic facilities that meet Ed Spec, reuse of the existing Auditorium, a shorter construction period of two and a half years, academic space designed specifically for campus use, grand central space which offers a lively combination of spaces – media center, cafeteria, etc. all work together to create a vibrant, thriving school community.

Cost Review

The two pages that follow include recommendations/assumptions inherent in the cost estimates and a comparison of the estimates for each scheme. Costs shown are the hard costs associated with construction and do not include the Owner's soft costs. As a general rule of thumb soft costs can

Recommendations Matrix by Discipline

Category	Max Renovation	New Construction	Partial Re-Use
Architectural Exterior/Interior	30% Glazing, 30% Metal Panel, 30% Brick, 10% Other, 20% Green Roof. Interior finishes – polished concrete, VCT, carpet, wood gym floor and ceramic tile	Same	Same
Structural	Match existing - Steel frame, composite floor slabs,steel roof deck	Steel frame, composite floor slabs + steel roof deck	Same
Mechanical	Geothermal – Heat Recovery Variable Refrigerant Flow (VRF) Water Source System	Same	Same
Plumbing + Fire Protection	Fully sprinklered, complete piping replacement	Same	Same
Electrical	Transformer/utility vault + subpanels remain, new feeders + panelboards, new generator, fire alarm system + emergency lighting	Transformer/utility vault remain, new feeders, panelboards, subpanels, generator, fire alarm system + emergency lighting	Transformer/utility vault remain, new feeders, panelboards, subpanels, generator, fire alarm system + emergency lighting

run between 25-30% of the total project costs with the hard costs make up the remaining project costs varying between 70-75%. An example of typical project soft costs is as follows:

Legal fees
Architectural and Engineering design fees
Permits, fees and expediting
Plan check fees – Agency Preliminary Design Reviews
Financing fees
Insurance
Loans/ Construction interest
Taxes
Construction Management fees
Commissioning
Owner's administration
3rd Party construction oversight and testing
Licensing fees
Property assessment fees
Sewage and water connection fees
Equipment rental fees
Moving costs
Temporary staging/storage costs
Construction Contingency – 5-10% of Hard Costs

Feasibility Study Cost Estimate Comparison

Div. #	Division	%	Max Renovation	%	New Construction	%	Partial Re-Use
1	General Conditions		$4,500,000		$3,600,000		$3,600,000
2	Site Work		$13,134,786		$14,429,464		$14,380,518
3	Concrete		$3,257,554		$5,684,899		$5,256,069
4	Masonry		$4,877,290		$4,172,918		$4,099,198
5	Metals		$5,208,651		$9,015,176		$8,237,663
6	Woods, Plastics & Composites		$80,574		$82,341		$78,803
7	Thermal & Moisture Protection		$6,105,702		$5,002,320		$5,283,031
8	Doors		$5,014,088		$4,572,836		$4,203,656
9	Finishes		$5,438,406		$7,030,369		$7,062,621
10	Specialities		$1,496,866		$1,502,608		$1,491,108
11	Equipment		$1,050,000		$1,050,000		$1,050,000
12	Furnishings		$1,777,509		$2,013,252		$1,721,991
13	Special Constructions		$1,611,484		$1,646,820		$1,576,052
14	Conveying		$190,000		$190,000		$190,000
15	Plumbing		$3,926,399		$3,998,396		$3,854,206
15	Mechanical		$22,297,252		$22,466,345		$21,574,951
16	Electrical		$13,568,466		$14,085,598		$13,530,582
Subtotal			**$93,535,027**		**$100,543,342**		**$97,190,449**
	Phasing Premium	3.0%	$2,806,051	0.0%		0.0%	
	Design Contingency	5.0%	$4,817,054	4.0%	$4,021,734	4.0%	$3,887,618
	Escalation	7.5%	$7,586,860	5.5%	$5,751,079	5.5%	$5,559,294
	Bonds/Insurance	2.0%	$2,174,900	2.0%	$2,206,323	2.0%	$2,132,747
	GC's Overhead/Profit	4.0%	$4,349,800	4.0%	$4,412,646	4.0%	$4,265,494
Total			**$115,269,692**		**$116,935,124**		**$113,035,602**

Geotechnical Engineering

Max Renovation Scheme

Subsurface conditions for this scheme are believed to be similar to the current building. However, existing fill is expected to be present in the area of new dining hall and new gym. Piles or Geopiers may be required for support of the new gym and dining hall building. Normal spread footings may be feasible for other bumpout sections.

New Construction Scheme

For this scheme, approximately a half of the new building will extend into the existing track field. Although no soil investigation data is available in the track field area, deep fill is expected to be present in the current track field based on our inspection of the existing conditions and topography. Piles or Geopiers may be required for the western half of the proposed building. Normal spread footings may be feasible in other areas.

Partial Reuse (Hybrid) Scheme

New building will extend into the current track field. As mentioned in the above section, relatively deep fill is expected to be present in the western portion of the new building. Piles or Geopiers may be required in the western 1/3 of the new building. However, normal spread footings may be feasible in other areas.

Soil Investigation

For all the above schemes, comprehensive geotechnical investigation will be required to properly evaluate the foundation conditions.

Structural Design

In each concept design the building is comprised of volumes of varying heights offering multiple roof levels with open spaces. In the Max Renovation scheme, there is still a significant amount of new construction including a new Administrative wing, classroom building, Gymnasium and food Service Area in order to comply with current 21st century standards. The present Auditorium will remain as-is with auxiliary spaces. The building also features an open courtyard in the center. There will be several large interior spaces, some of which may be broken up with folding partitions.

Roof construction would be most efficiently constructed of 4-ply roofing over rigid insulation on galvanized steel roof deck, supported with joists and steel beams. LH joists could be utilized over the gymnasium, cafeteria, and auditorium to provide extended column-free areas. Framed floor construction could be 6.25” total depth concrete on 3” composite steel deck, with studs connecting deck to supporting steel beams. The gymnasium, kitchen, and dining area could be free-space design. Joists with spans ranging from 40’0” to 80’0” woudl work well to provide the open space required. Primary roof construction could be 4-ply roofing over rigid insulation on galvanized steel roof deck. Depth may be ½”, 3”, 4 ½”, 6”, or 7 ½” as required by economy.

Lateral load woudl ideally be resisted by cross-bracing utilizing tubes. This connects to the wide flange or tube columns at each side. The non-lateral columns coulld be wide flange, W shaped columns or round shape and rectangular AESS tube columns, per the architectural agreement. First floor slab woudl be best as a 6” structural slab on grade, reinforced with 6”x6”-W2.9xW2.9 welded wire fabric. As per the initial foundation report, the building foundation will be spread footing with bearing capacity of 3000-5000 psf.

In the Max Renovation and Partial Reuse schemes, the existing auditorium would remain as is, but alteration is expected with code review and the involvement of future theater consultants. Any structural modification required will be dealt with at a later stage.

Mechanical Design

The proposed design for the Max Renovation scheme will be a Geothermal Heat Recovery Variable Refrigerant Flow Water Source System utilizing vertically drilled heat dissipating ground wells due to the advantages outlined below.

Geothermal Heat Recovery Variable Refrigerant Flow (VRF) Water-Source System Description

The Geothermal Heat Recovery Variable Refrigerant Flow (VRF) Water-Source System is a two-pipe fan coil system which utilizes incremental room units with a combination of a fan and a single heat transfer coil used for both heating and cooling in a common enclosure. Each fan coil unit is served with refrigerant from indoor water-source heat recovery units. Multiple indoor fan coil units can be served from one water source heat pump unit, and the heat pumps have the ability to heat and cool spaces simultaneously.

The water source heat pumps are connected to a ground water loop in order to transfer heat from the geothermal exchange system to the building refrigerant flow system. Ground water will be circulated to each VRF water-source heat recovery unit to provide heating and cooling. The ground water geothermal system utilizes multiple wells to exchange heat between the building and the ground. The relatively constant temperature of the ground provides efficient heat transfer throughout the year. Water source heat pumps act as heat exchangers between the building and the ground water, and water is moved through ground wells (approximately twenty feet apart) via pumps.

The system also provides heat recovery within the building prior to be discharged to the ground loop. In order to accomplish this, the refrigerant system transfers heat within the building to utilize excess heat from one space to provide heat to another space that requires it. The flow of refrigerant is modulated to maintain space temperatures, and thermostats are located at the room level for individual temperature control. Room air is re-circulated through the unit by the fan, heated or cooled, and filtered before being discharged back to the space. Outside air is conditioned to room temperature setting via dedicated outdoor air units, distributed throughout the building via ductwork and either directly ducted to the fan coil unit or introduced into the occupied space for mixing within the space.

System Advantages

- Built-in ability to recover heat throughout the building during normal operation.
- Due to the ability to recover heat in two stages (through the VRF operation and then through the Geothermal operation) there is a higher life expectancy of the geothermal system due to minimized utilization
- Highest operational energy efficiency available.
- System performance tailored to individual comfort control
- Low noise operational levels (less than or equal to 40dBA)
- Average system operational and maintenance service required
- Modularity of system and high level of zoning availability – water-cooled heat recovery units are modular so that energy is saved during lightly occupied periods – only water-cooled heat recovery units zoned to occupied space will run while remaining units are shut down
- Modularity increases reliability – only the area of the building that is served by that water-cooled heat recovery unit is impacted if maintenance is required or failure of unit or refrigerant piping occurs while the rest of the building remains operational; pumps for geothermal system will be N+1 redundancy to provide reliability within the geothermal system
- System allows for the highest LEED points accreditation due to its efficiency and renewable energy characteristics.

System Disadvantages

- Presence of refrigerant piping within occupied spaces. Refrigerant sensors may be required in some areas.
- High first cost due to geothermal well drilling.

System Components

The major HVAC equipment of the Geothermal Plant will generally include but not be limited to the following:

Variable Refrigerant Flow Fan Coils and Heat Recovery Water-Source VRF Units: VRF fan coil units will provide heating and cooling throughout the school and will be used to suite the spaces being served to provide proper cooling and heating. Each VRF fan coil unit will be connected to central refrigerant circuits running throughout the building that will connect

Appendix i

Educational Specifications Summary

HIGH POINT HIGH SCHOOL			ED SPEC					SCHEMES					
5.9.2014		ROOMSPACE	TEACHING STATIONS	AUXILIARY SPACES	SF EACH	TOTAL SF	SF TALLY	TS FTE	Max Renovation Scheme	Diff fr Ed Spec	New Construction Scheme	Diff fr Ed Spec	Partial Reuse Scheme	Diff fr Ed Spec
01 ADMINISTRATION														
							6,145		6,015	-130	6,205	60	6,195	50
1.01	**Main Office**						5,345							
		LOBBY (IN ADDITION TO REG. CIRCULATION)		1	1000	1000								
		WAITIING AREA/RECEPTION		1	800	800								
		PRINCIPAL'S OFFICE (INCLUDES TLT/SHOWER)		1	230	230								
		CONFERENCE ROOM		1	300	300								
		ADMINISTRATIVE ASSISTANT'S OFFICE		1	120	120								
		BUSINESS MANAGER'S OFFICE/VAULT		1	150	150								
		ADMINISTRATIVE WORKROOM		1	300	300								
		ADMINISTRATVE SUPPLY STORAGE		1	75	75								
		MAIL ROOM		1	250	250								
		ATTENDANCE OFFICE		1	200	200								
		RECORDS STORAGE		1	600	600								
		SECURITY CENTER/OFFICE		1	450	450								
		SUPPLY (GENERAL) STORAGE		1	450	450								
		TELECOM/HEAD END ROOM		1	300	300								
		IT COORDINATOR OFFICE		1	120	120								
1.02	**Faculty Support**						800							
		STAFF BREAK ROOM		1	800	800								
02 STUDENT SERVICES														
							5,530		5,505	-25	5,575	45	5,525	-5
2.01	**Guidance**						2,810							
		OFFICES		0	120	960								
		RECEPTION/WORK AREA		1	200	200								
		CONFERENCE/TESTING ROOMS		2	200/300	500								
		CAREER CENTER		1	850	850								
		SCHOOL TO CAREER COORDINATOR OFFICE		1	150	150								
		REGISTRAR (MAY BE IN ADMIN SUITE)		1	150	150								
2.02	**Health Suite**						1,070							
		WAITING AREA/RECEPTION		1	200	200								
		OFFICE (SHARED W/ 2 NURSES)		1	200	200								
		TREATMENT AREA		1	150	150								
		ISOLATION ROOM		1	120	120								
		COTS		2	100	200								
		STORAGE		1	50	50								
		TOILETS (ONE PER COT AREA; ONE PER ADULT)		3	50	150								
2.03	**Health Clinic (optional)**						1,000							
		WAITING AREA/RECEPTION		1	130	130								

HIGH POINT HIGH SCHOOL			ED SPEC						SCHEMES					
5.9.2014		ROOMSPACE	TEACHING STATIONS	AUXILIARY SPACES	SF EACH	TOTAL SF	SF TALLY	TS FTE	Max Renovation Scheme	Diff fr Ed Spec	New Construction Scheme	Diff fr Ed Spec	Partial Reuse Scheme	Diff fr Ed Spec
		PROVIDER OFFICES		2	120	240								
		EXAM ROOMS		2	80	160								
		DENTAL SUITE (CHECK UP ONLY)		1	120	120								
		LAB/RECORDS ROOM		1	200	200								
		STORAGE		1	50	50								
		TOILETS (ONE PER COT AREA; ONE PER ADULT)		2	50	100								
2.04	Student Services						650							
		SCHOOL STORE		1	250	250								
		PUBLICATIONS ROOM		1	400	400								
			0					0						
03 SPECIAL EDUCATION														
							8,600		8,826	226	8,815	215	8,675	75
3.01	General						2,400							
		CLASSROOM (5 CRI, 2 FULL TIME, READ 180)	0		850	0								
		OT/PT/SPEECH SUITE/STORAGE		1	400	400								
		LIFE SKILLS LAB		1	800	800								
		RESOURCE ROOM		2	500	1000								
		SENSORY/QUIET ROOM		1	200	200								
3.02	Admin suite						2,200							
		CO-TEACHER SUITE		1	900	900								
		TEACHER WORKROOM		1	400	400								
		OFFICE/COORDINATOR		1	150	150								
		CONFERENCE ROOM		1	300	300								
		OFFICE		3	150	450								
0.01	Regional Program						8,600							
		CLASSROOMS		5	1000	5,000								
		TOILET/CHANGING ROOMS		5	150	750								
		EQUIPMENT PARKING		5	150	750								
		CLASSROOM STORAGE		5	240	1,200								
		OT/PTM.O.V.E. ROOM		1	900	900								
		LAUNDRY ROOM		1	80	80								
		SPEECH THERAPY		1	300	300								
		COORDINATOR OFFICE		1	150	150								
		SECURE RECORD STORAGE		1	60	60								
		ITINERANT/SPECIALIST STAFF OFFICE		1	400	400								
		CONFERENCE ROOM		1	400	400								
		HEALTH ROOM W/TOILETS		1	1700	1700								
			0					*0*						

HIGH POINT HIGH SCHOOL			ED SPEC						SCHEMES					
5.9.2014		ROOMSPACE	TEACHING STATIONS	AUXILIARY SPACES	SF EACH	TOTAL SF	SF TALLY	TS FTE	Max Renovation Scheme	Diff fr Ed Spec	New Construction Scheme	Diff fr Ed Spec	Partial Reuse Scheme	Diff fr Ed Spec
04 TEACHING AND LEARNING (CORE ACADEMIC SHARED BETWEEN 4 CAMPUSES)														
							35,600		35,457	-143	35,605	5	35,748	148
4.01	Core Academic						3,400							
		PROJECT/LECTURE AREA		1	2800	2800								
		ALTERNATE EDUCATION CLASSROOM	1		600	600		1						
		HEALTH LAB	1		900	900		1						
4.02	Technology Hub						2,000							
		TECHNOLOGY HUB (60 STATIONS)	2		2000	2000		2						
4.03	Foundations of Technology						6,900							
		ACADEMIC CLASSROOM/STUDIOS	4		900	2700		4						
		PRODUCTION AREA (DIVIDABLE)		1	2400	2400								
		MATERIAL STORAGE		1	800	800								
		STUDENT STORAGE		3	250	750								
		COLLAB./PARTNERSHIP OFFICE		1	250	250								
4.04	Other						5,500							
		JOURNALISM, BUSINESS, AND FASHION DESIGN	5		1100	5500		5						
4.05	ESOL/AVID						3,100							
		CLASSROOMS (PLUS 2 IN EA LEARNING COMM.)	2		850	1700		2						
		BLENDED LEARNING LAB		1	500	500								
		CO-TEACHER SUITE		1	900	900								
4.06	ESOL/AVID Parent Center						1,450							
		RECEPTION		1	150	150								
		OFFICE		2	150	300								
		PARENT RESOURCE ROOM		1	700	700								
		PANTRY/STORAGE		1	300	300								
4.07	Special Ed General						11,050							
		CLASSROOM (5 CRI, 2 FULL TIME, READ 180)	8		850	6800		8						
		OT/PT/SPEECH SUITE/STORAGE		1	400	400								
		LIFE SKILLS LAB		1	800	800								
		RESOURCE ROOM		6	475	2850								
		SENSORY/QUIET ROOM		1	200	200								
4.08	Special Ed Admin suite						2,200							
		CO-TEACHER SUITE		1	900	900								
		TEACHER WORKROOM		1	400	400								
		OFFICE/COORDINATOR		1	150	150								
		CONFERENCE ROOM		1	300	300								
		OFFICE		3	150	450								
			23					*23*						

SHWGROUP

HIGH POINT HIGH SCHOOL			ED SPEC						SCHEMES					
5.9.2014		ROOMSPACE	TEACHING STATIONS	AUXILIARY SPACES	SF EACH	TOTAL SF	SF TALLY	TS FTE	Max Renovation Scheme	Diff fr Ed Spec	New Construction Scheme	Diff fr Ed Spec	Partial Reuse Scheme	Diff fr Ed Spec
		TL OF ALL CAMPUS/ACADEMY					114,620		114,610	-10	115,005	385	114,958	338
05 Campus 1 - Environmental Science Academy (Capacity 600)														
							28,785							
5.01	**Teaching and Learning Spaces (Core Academic)**						12,525							
		ACADEMIC CLASSROOMS/STUDIOS	11		925	10175		11						
		MULTIPURPOSE STUDIOS		1	1100	1100								
		LEARNING CENTER COMMONS		1	1250	1250								
5.02	**Guidance**						240							
		OFFICES		2	120	240								
5.03	**Special Education**						500							
		RESOURCE ROOM		1	500	500								
5.04	**ESOL/AVID**						1,700							
		CLASSROOMS (2 IN EA CAMPUS)	2		850	1700		2						
5.05	**Foreign Language**						900							
		FOREIGN LANGUAGE BLENDED LEARNING LABS	2		450	900		2						
5.06	**Academy Spaces**						5,650							
		ENVIRONMENTAL PROJECT LAB/CLASSROOM	2		1800	3600		2						
		PREP/STORAGE		2	200	400								
		GREENHOUSE		1	1200	1200								
		EQUIPMENT STORAGE		1	200	200								
		PARTNERSHIP OFFICE/CONFERENCE		1	250	250								
5.07	**Academy Support Suite**						1,270							
		RECEPTION		1	100	100								
		ADMINISTRATIVE OFFICES		1	120	120								
		TEACHER WORKROOM		1	400	400								
		DEPARTMENT OFFICE/STORAGE		1	250	250								
		CONFERENCE ROOMS		1	400	400								
5.08	**Science Labs**						4,200							
		SCIENCE SUITE - WET LAB - AP BIOLOGY LAB	1		1400	1400		1						
		SCIENCE SUITE - CLASSROOM	2		1400	2800		2						
5.09	**Science Support**						1,800							
		PREP		7	200	1400								
		DEPT STORAGE/CHEMICAL STORAGE		2	200	400								
			20					*20*						

HIGH POINT HIGH SCHOOL			ED SPEC						SCHEMES					
5.9.2014		ROOMSPACE	TEACHING STATIONS	AUXILIARY SPACES	SF EACH	TOTAL SF	SF TALLY	TS FTE	Max Renovation Scheme	Diff fr Ed Spec	New Construction Scheme	Diff fr Ed Spec	Partial Reuse Scheme	Diff fr Ed Spec
06 Campus 2 - Engineering and Science Academy (Capacity 600)														
							27,660							
6.01	Teaching and Learning Spaces (Core Academic)						11,600							
		ACADEMIC CLASSROOMS/STUDIOS	10		925	9250		10						
		MULTIPURPOSE STUDIOS		1	1100	1100								
		LEARNING CENTER COMMONS		1	1250	1250								
6.02	Guidance						240							
		OFFICES		2	120	240								
6.03	Special Education						500							
		RESOURCE ROOM		1	500	500								
6.04	ESOL/AVID						1,700							
		CLASSROOMS (2 IN EA CAMPUS)	2		850	1700		2						
6.05	Foreign Language						900							
		FOREIGN LANGUAGE BLENDED LEARNING LABS	2		450	900		2						
6.06	Academy Spaces						4,450							
		PLTW LAB	1		1600	1600		1						
		PLTW WORKSHOP	1		1100	1100		1						
		COMPUTER SCIENCE	1		1100	1100		1						
		PREP/STORAGE		2	200	400								
		PARTNERSHIP OFFICE/CONFERENCE		1	250	250								
6.07	Academy Support Suite						870							
		RECEPTION		1	100	100								
		ADMINISTRATIVE OFFICES		1	120	120								
		TEACHER WORKROOM		1	400	400								
		DEPARTMENT OFFICE/STORAGE		1	250	250								
		CONFERENCE ROOMS		0	400	0								
6.08	Science Labs						5,600							
		SCIENCE SUITE - WET LAB - CHEMISTRY LAB	1		1400	1400		1						
		SCIENCE SUITE - CLASSROOM	2		1400	2800		2						
		PHYSICS LAB	1	1	1400	1400		1						
6.09	Science Support						1,800							
		PREP		7	200	1400								
		DEPT STORAGE/CHEMICAL STORAGE		2	200	400								
			21					*21*						
07 Campus 3 - Homeland Security and Militrary Science (Capacity 600)														
							28,120							
7.01	Teaching and Learning Spaces (Core Academic)						11,600							
		ACADEMIC CLASSROOMS/STUDIOS	10		925	9250		10						
		MULTIPURPOSE STUDIOS		1	1100	1100								
		LEARNING CENTER COMMONS		1	1250	1250								

SHWGROUP

HIGH POINT HIGH SCHOOL			ED SPEC						SCHEMES					
5.9.2014		ROOMSPACE	TEACHING STATIONS	AUXILIARY SPACES	SF EACH	TOTAL SF	SF TALLY	TS FTE	Max Renovation Scheme	Diff fr Ed Spec	New Construction Scheme	Diff fr Ed Spec	Partial Reuse Scheme	Diff fr Ed Spec
7.02	**Guidance**						240							
		OFFICES		2	120	240								
7.03	**Special Education**						500							
		RESOURCE ROOM		1	500	500								
7.04	**ESOL/AVID**						1,700							
		CLASSROOMS (2 IN EA CAMPUS)	2		850	1700		2						
7.05	**Foreign Language**						900							
		FOREIGN LANGUAGE BLENDED LEARNING LABS	2		450	900		2						
7.06	**Academy Spaces**						5,910							
		CLASSROOMS	2		900	1800		2						
		AEROSPACE/CYBER SECURITY LAB	1		3000	3000		1						
		OFFICE CENTER		1	250	250								
		ARMORY STORAGE		1	300	300								
		UNIFORM STORAGE		1	560	560								
7.07	**Academy Support Suite**						1,270							
		RECEPTION		1	100	100								
		ADMINISTRATIVE OFFICES		1	120	120								
		TEACHER WORKROOM		1	400	400								
		DEPARTMENT OFFICE/STORAGE		1	250	250								
		CONFERENCE ROOMS		1	400	400								
7.08	**Science Labs**						4,200							
		SCIENCE SUITE - WET LAB	1	1	1400	1400		1						
		SCIENCE SUITE - CLASSROOM	2	2	1400	2800		2						
7.09	**Science Support**						1,800							
		PREP		7	200	1400								
		DEPT STORAGE/CHEMICAL STORAGE		2	200	400								
			20					*20*						
08 Campus 4 - Hospitality, ProStart and Childcare (Capacity 600)														
							30,055							
8.01	**Teaching and Learning Spaces (Core Academic)**						12,525							
		ACADEMIC CLASSROOMS/STUDIOS	11		925	10175		11						
		MULTIPURPOSE STUDIOS		1	1100	1100								
		LEARNING CENTER COMMONS		1	1250	1250								
8.02	**Guidance**						240							
		OFFICES		2	120	240								
8.03	**Special Education**						500							
		RESOURCE ROOM		1	500	500								
8.04	**ESOL/AVID**						1,700							
		CLASSROOMS (2 IN EA CAMPUS)	2		850	1700		2						
8.05	**Foreign Language**						900							
		FOREIGN LANGUAGE BLENDED LEARNING LABS	2		450	900		2						

HIGH POINT HIGH SCHOOL			ED SPEC						SCHEMES					
5.9.2014		ROOMSPACE	TEACHING STATIONS	AUXILIARY SPACES	SF EACH	TOTAL SF	SF TALLY	TS FTE	Max Renovation Scheme	Diff fr Ed Spec	New Construction Scheme	Diff fr Ed Spec	Partial Reuse Scheme	Diff fr Ed Spec
8.06	ProStart (Capacity 200-250)						5,020							
		FOOD AND NUTRITION LAB	1		1600	1600		1						
		KITCHEN/CAFÉ	1		2350	2350		1						
		LOCKERS		2	210	420								
		STORAGE		2	200	400								
		PARTNERSHIP OFFICE/CONFERENCES	1		250	250		1						
8.07	Child Development (Capacity 30)						2,300							
		CHILD LAB		1	1150	1150								
		CLASSROOM	1		800	800		1						
		STORAGE		1	150	150								
		OUTSIDE STORAGE		1	100	100								
		LAUNDRY		1	100	100								
8.08	Academy Support Suite						870							
		RECEPTION		1	100	100								
		ADMINISTRATIVE OFFICES		1	120	120								
		TEACHER WORKROOM		1	400	400								
		DEPARTMENT OFFICE/STORAGE		1	250	250								
		CONFERENCE ROOMS		0	400	0								
8.09	Science Labs						4,200							
		SCIENCE SUITE - WET LAB	1		1400	1400		1						
		SCIENCE SUITE - CLASSROOM	2		1400	2800		2						
8.1	Science Support						1,800							
		PREP		7	200	1400								
		DEPT STORAGE/CHEMICAL STORAGE		2	200	400								
			22					*22*						
09 FINE ARTS														
							39,890		40,106	216	40,140	250	40,143	253
9.01	Visual Art						11,000							
		MULTI-PURPOSE STUDIO	3		1400	4200		3						
		3D SCULPTURE	1		1600	1600		1						
		3D CERAMICS	1		1600	1600		1						
		PHOTOGRAPHY/GRAPHIC ARTS	1		1600	1600		1						
		ART COMMONS/GALLERY (PART OF CIRCULATION)		1	1000	1000								
		STORAGE		6	VARIES	800								
		KILN ROOM		1	200	200								
9.02	Music						6,140							
		INSTRUMENTAL MUSIC	1		2500	2500		1						
		VOCAL MUSIC	1		1600	1600		1						
		PRACTICE ROOMS		3	80	240								
		INSTRUMENT STORAGE		2	300	600								
		UNIFORM STORAGE		1	300	300								

HIGH POINT HIGH SCHOOL			ED SPEC						SCHEMES				
5.9.2014		ROOMSPACE	TEACHING STATIONS	AUXILIARY SPACES	SF EACH	TOTAL SF	SF TALLY	TS FTE	Max Renovation Scheme	Diff fr Ed Spec	New Construction Scheme	Diff fr Ed Spec	
		KEYBOARDING LAB		1	500	500							
		CHORAL STORAGE		1	200	200							
		MUSIC LIBRARY/OFFICE		1	200	200							
9.03	Drama						2,200						
		DRAMA CLASSROOM	1		1800	1800		1					
		DRAMA STORAGE		1	400	400							
9.04	Auditorium						18,650						
		AUDITORIUM		1	14000	14000							
		LOBBY		1	2000	2000							
		AUDITORIUM STAGE		1	2250	2250							
		TICKET BOOTH/BOX OFFICE		1	75	75							
		SOUND AND LIGHT CONTROL ROOM		1	125	125							
		CHAIR/PIANO STORAGE		1	200	200							
9.05	Performance Support						1,900						
		COSTUME/PROP STORAGE		2	200	400							
		SCENE SHOP/STORAGE		1	900	900							
		DRESSING ROOMS		2	300	600							
			9					*9*					
10 PHYSICAL EDUCATION													
							37,980		37,989	9	37,900	-80	37,
10.01	Physical Education						26,880						
		GYMNASIUM + SEATING(2500)	1	1	14000	14000		1					
		AUXILIARY GYM	1	1	6500	6500		1					
		WRESTLING ROOM	1	1	1680	1680		1					
		FITNESS/WEIGHT ROOM	1	1	2800	2800		1					
		DANCE/ACTIVITY ROOM	1	1	1900	1900		1					
10.02	Support						11,100						
		LOBBY (IN ADDITION TO REG. CIRCULATION)		1	1200	1200							
		PE LOCKER ROOMS/STORAGE		2	1800	3600							
		TEAM LOCKER ROOMS		3	VARIES	2400							
		DEPT. OFFICES		2	150	300							
		STAFF/COACHES WORKROOM W/ TOILETS		1	800	800							
		ATHLETIC DIRECTORS OFFICE		1	150	150							
		STORAGE		5	VARIES	2000							
		CONCESSION		1	200	200							
		TRAINING ROOM	1	1	300	300		1					
		LAUNDRY		1	150	150							
			6					*6*					

HIGH POINT HIGH SCHOOL			ED SPEC						SCHEMES					
5.9.2014		ROOMSPACE	TEACHING STATIONS	AUXILIARY SPACES	SF EACH	TOTAL SF	SF TALLY	TS FTE	Max Renovation Scheme	Diff fr Ed Spec	New Construction Scheme	Diff fr Ed Spec	Partial Reuse Scheme	Diff fr Ed Spec
11 MEDIA														
							13,220		12,925	-295	13,208	-12	13,600	380
11.01	**Media Center**						9,000							
		MEDIA ROOM		1	7000	7000								
		MEDIA CLASSROOM		1	1000	1000								
		COMPUTER RESEARCH CLASSROOM		1	1000	1000								
11.02	**Staff Development Suite (Corridor Access)**						1,150							
		CONFERENCE ROOM		1	750	750								
		PROFESSIONAL LIBRARY		1	250	250								
		INSTRUCTIONAL COACH OFFICE		1	150	150								
11.03	**Multi-Media Production/TV**						1,700							
		EDITING SUITE/CLASSROOM		1	900	900								
		STUDIO		1	400	400								
		STORAGE		1	200	200								
		CONTROL BOOTH		1	200	200								
11.04	**Support**						1,370							
		STAFF TOILET		1	40	40								
		OFFICE		1	200	200								
		WORKROOM		1	300	300								
		EQUIPMENT STORAGE		1	180/350	530								
		HEAD END ROOM		1	300	300								
			0					*0*						
12 FOOD SERVICES														
							19,900		19,835	-65	19,925	25	20,460	560
12.01	**Dining**						12,000							
		CAFETERIA/COMMONS		1	12000	12000								
12.02	**Food Service**						7,900							
		KITCHEN		1	5500	5500								
			0					*0*						
13 BUILDING SERVICES														
							1,400		1,325	-75	1,350	-50	1,332	-68
13.01	**Maintenance/Operations**													
		CUSTODIAL SHOP		1	400	400								
		CUSTODIAL OFFICE		1	100	100								
		CUSTODIAL STORAGE		2	300	600								
		Total Teaching Stations	**121**											
		Total FTE Capacity						**121**						
		Total Net Square Footage					**282,885**							
		TOTAL GROSS AREA					**396,039**							

SHWGROUP

Appendix ii

Codes and Regulations

Overview

High Point High School, originally built in 1954 with additions in 1966 and 1975, is a combination of separate single and multi-story wings of various construction types: predominately structural steel frame with steel roof deck, but also reinforced concrete frame with pre-cast concrete waffle slab roof. Floors are concrete slabs and the exterior walls are comprised of masonry construction.

The Administrative Wing is the only component of the building that has fire sprinklers.

Toilet facilities are provided by group toilet rooms.

Applicable Building, Fire and Related Codes and Regulations

The current codes and regulations that have purview over this project are as follows:

- 2012-Maryland Building Performance Standards Regulations (COMAR 05.02.07)
- 2012-International Building Code (IBC) and Subtitle 4 Prince George's County Building Code
- 2012-International Mechanical Code
- 2012-International Energy Conservation Code
- 2012-International Fuel Gas Code
- 2012-National Electrical Code
- 2012-NFPA 101 Life Safety Code and Subtitle 11 Prince George's County Fire Safety Code
- ANSI Standard S12.60 Classroom Acoustics
- ASHRAE Standards
- Prince George's County Subtitle 4, Sec. 4-180 Chapter 11 – Accessibility
- 2012-Maryland Accessibility Code (COMAR 05.02.02)
- 2010 Americans with Disabilities Act Accessible Guidelines
- State of Maryland Department of Education Guidelines and DGS Standards

2012-International Building Code (IBC)

Use and Occupancy (IBC – Section 305):

- E – Education
- A2 – Cafeteria
- A3 – Gymnasium

Type of Construction (IBC – Sections 602, T601):

- Type IB, non-combustible, protected, or
- Type IIA, non-combustible, protected, or
- Type IIB, non-combustible, protected

Existing Height and Area:

- Existing Building: 4 stories
- Total Area: 318,376 SF
- Total Area to be Renovated:
  - Scheme A - Renovation: 203,031 SF
  - Scheme C - Hybrid: 22,683 SF

Proposed Area:

	Scheme A Maximum Renovation	Scheme B New Construction	Scheme C Hybrid
Renovation Area	203,031 SF	0 SF	22,683 SF
Addition Area	199,840 SF	0 SF	371,330 SF
Total Area	402,871 SF	411,705 SF	394,013 SF
Area of Largest Floor	190,694 SF	204,722 SF	207,843 SF

Allowable Height and Area (IBC – Table 503):

- Type IB: 5 stores, 160' height, Unlimited Area per floor
- Type IIA: 3 stores, 65' height, 26,500 SF per floor
- Type IIB, 2 stores, 55' height, 14,500 SF per floor

- Area Modifications (IBC – Section 506):
  - 200% for sprinklered buildings (506.3)
  - 1% for each percent accessible perimeter above 25% accessible

- Modified area assuming fully sprinklered with 50% accessible perimeter
  - Type IIA:
  - Type IIB:

- Modified height assuming fully sprinklered:
  - Type IIA:
  - Type IIB:

Separation of Occupancies: Education from Assembly

- No separation requirement with or without sprinklers (IBC T508.3.3)
- Two Hour separation reduced to One Hour with sprinklers [NFPA Table 6.1.14.4.1(a)]

Fire Resistance ratings in hours (IBC T601, T602)

Construction Type	IB	IIA	IIB
Structural Frame	2	1	0
Bearing Walls (Interior)	2	1	0
Bearing Walls (Exterior)	2	1	0
Nonbearing Walls	0	0	0
Floor Construction	2	1	0
Roof Construction	1	1	0

Occupant Load (T 1004.1.1)

- Classrooms:20 NSF per person
- Shops and other vocational areas: 50 NSF per person
- Gymnasium (un-concentrated): 15 NSF per person
- Cafeteria (un-concentrated tables and chairs): 15 NSF per person

Means of Egress

- Means of egress that provide a continuous and unobstructed path of vertical and horizontal egress travel to a public way: Two (2) Exits required. Occupant Load of 501 – 1000: Three (3) Exits required. Occupant Load above 1,000: Four (4) Exits required.
- Accessible Exits: One (1) required.
- Signage indicating an accessible entrance shall be provided in compliance with IBC 1110.

Means of Egress Components

- Minimum Corridor Width: 6 Feet
- Stair Width: 0.2 inches per person (w/sprinkler)
- Doors and Ramps: 0.15 inches per person (w/sprinkler)

Exit Access Travel Distance

- Maximum travel distance for occupancy with sprinkler system: 250 Feet (IBC 1016, T1016.1).
- Maximum travel distance for occupancy with sprinkler system: 200 Feet (NFPA 14.2.6.3).

Dead End Corridor (IBC 1018.4), (NFPA 14.2.5.2)

- With sprinkler system: 50 Feet

Fire Rated Construction

	Unsprinklered	Sprinklered	Smoke Resistant Construction	
Corridors	1	0	Yes	(IBC T1018.1)
Stairs	2	0	Yes	
Mechanical Room (large boilers or furnaces)	1	0	Yes	(T509)
Storage exc. 100 SF	0	0	Yes	(T509) no longer listed

**Note: Fire and smoke dampers shall be provided at shafts.

- Smoke Control (508.2.2.1): Where Table 508.2 permits an automatic fire extinguishing system without a fire barrier, the incidental use area shall be separated by construction capable of resisting the passage of smoke.

Shaft enclosures including stair and elevator (IBC 713):

- 4 stories or more: 2 hour, but not less than floor penetrated
- Less than 4 stories: 1 hour, but not less than floor penetrated

E.4 NFPA Chapter 14 - New Education Occupancies

Means of Egress

- Common path of travel not to exceed 100 feet with sprinklers (14.2.5.3.1).
- Rooms or spaces larger than 1,000 SF, or with occupancy greater than 50: Two exist access doors required (14.2.5.4).
- Windows for rescue: Not required in a sprinkled building

Means of Egress Components

- Minimum Corridor Width: 6 Feet
- Stair Width: 0.3 inches per person
- Doors and Ramps: 0.2 inches per person

Protection from Hazards (14.3.2)

- Separation from the rest of the building by 1-hour not required with sprinklers:
  - Janitor's Closets
  - Mechanical Rooms with boilers of furnace
- Cooking facilities shall be protected in accordance with 9.2.3
- Openings shall not be require protection between food preparation areas and dining areas
- Alcohol based Hand-rub dispensers (14.3.2.4):
  - Dispenser shall be installed in rooms and spaces separate from corridors

Subdivision of Building Space

- Subdivide into compartments with smoke partitions of not less than 1 hour rating not required in sprinkelered building (14.3.7.2)
- Corridor Walls are not required to be rated provided that they are smoke partitions (14.3.6)

E.5 International Energy Code

Zone 4A

Thermal Envelope Requirements:

- Roof: R-25ci
- Walls above grade:
  - Mass – R9.5ci
  - Metal Framed – R-13 + R7.5ci
- Walls below grade: R 7.5ci
- Slab-on-Grade Floors: R-10 for 24 inches below

Lighting Power Density: 1.2 w/sf

Appendix iii

Forty-Year Life Cycle Cost Comparisons

The Forty-Year Life-Cycle Cost Analysis presented herein is:

A. Calculated on a present value basis.
B. Set forth in accordance with IAC direction for feasibility studies.
C. The life-cycle cost analysis here has included the three design options.

The following Tables represent a summary of important values associated with each building scheme:

MAX RENOVATION SCHEME	
Factor	Cost
Annual Operating Cost per square foot	$1.09
Annual Service & Maintenance Cost per square foot	$0.15
Total Annual O&M Cost	$499,529
Estimated Square Feet	402,871
Total annual O&M Cost per square foot	$1.24
Period (years)	40
Escalated Rate %	7.5
Project Cost (A/E Construction Estimate)	$22,297,252
Present Value of Total Life Cycle Cost	$33,737,632
Future Value of Life Cycle Cost (40-Year)	**$42,247,360**

NEW CONSTRUCTION SCHEME	
Factor	Cost
Annual Operating Cost per square foot	$.97
Annual Service & Maintenance Cost per square foot	$0.15
Total Annual O&M Cost	$461,045
Estimated Square Feet	411,705
Total annual O&M Cost per square foot	$1.12
Period (years)	40
Escalated Rate %	5.5
Project Cost (A/E Construction Estimate)	$22,466,345
Present Value of Total Life Cycle Cost	$33,014,627
Future Value of Life Cycle Cost (40-Year)	**$40,912,265**

PARTIAL REUSE SCHEME	
Factor	Cost
Annual Operating Cost per square foot	$.97
Annual Service & Maintenance Cost per square foot	$0.15
Total Annual O&M Cost	$441,233
Estimated Square Feet	394,013
Total annual O&M Cost per square foot	$1.12
Period (years)	40
Escalated Rate %	5.5
Project Cost (A/E Construction Estimate)	$21,574,951
Present Value of Total Life Cycle Cost	$31,669,947
Future Value of Life Cycle Cost (40-Year)	**$39,228,204**

Forty-Year Life Cycle Cost Comparisons

LIFE CYCLE COST ANALYSIS SUMMARY			
	SCHEME A - "MAXIMUM RENOVATION": GEOTHERMAL VRF SYSTEM	**SCHEME B - "ALL NEW": GEOTHERMAL VRF SYSTEM**	**SCHEME C - "RENOVATION AND NEW": GEOTHERMAL VRF SYSTEM**
INSTALLATION COST			
MECHANICAL - BASED ON COST ESTIMATE	$22,297,252	$22,466,345	$21,574,951
TOTAL	**$22,297,252**	**$22,466,345**	**$21,574,951**
ANNUAL OPERATING COSTS			
MAINTENANCE EXPENSE	$60,300	$61,756	$59,102
UTILITY EXPENSE	$439,229	$399,289	$382,131
TOTAL	**$499,529**	**$461,045**	**$441,233**
LIFE CYCLE COSTS (40 YEARS)			
FUTURE VALUE			
INSTALLATION COST	$22,297,252	$22,466,345	$21,574,951
MAINTENANCE EXPENSE	$2,692,937	$2,757,950	$2,639,434
UTILITY EXPENSE	$17,257,171	$15,687,971	$15,013,819
TOTAL	**$42,247,360**	**$40,912,265**	**$39,228,204**
NET PRESENT VALUE*			
INSTALLATION COST	$22,297,252	$22,466,345	$21,574,951
MAINTENANCE EXPENSE	$1,287,710.86	$1,318,798.51	$1,262,126.42
UTILITY EXPENSE	$10,152,669.33	$9,229,483.85	$8,832,869.70
TOTAL	**$33,737,632**	**$33,014,627**	**$31,669,947**

* Net Present Value = (Cost) x $((1+i)^n-1)/i(1+i)^n$

LIFE CYCLE COST ANALYSIS

SCHEME A - "MAXIMUM RENOVATION": GEOTHERMAL VRF SYSTEM

YEAR	0	1	2	3	4	5	6	7	8	9	10	TOTAL
INSTALLATION COSTS	$22,297,252	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$22,297,252**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	-	$60,300	$62,410.50	$64,594.87	$66,855.69	$69,195.64	$71,617.48	$74,124.10	$76,718.44	$79,403.58	$82,182.71	**$707,403**
ANNUAL OPERATING COST - UTILITY EXPENSE	-	$439,229	$452,405.48	$465,977.64	$479,956.97	$494,355.68	$509,186.35	$524,461.94	$540,195.80	$556,401.67	$573,093.72	**$5,035,264**
TOTAL	22,297,252	$499,529	$514,816	$530,573	$546,813	$563,551	$580,804	$598,586	$616,914	$635,805	$655,276	**$28,039,919**

SCHEME B - "ALL NEW": GEOTHERMAL VRF SYSTEM

YEAR	0	1	2	3	4	5	6	7	8	9	10	TOTAL
INSTALLATION COSTS	$22,466,345	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$22,466,345**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	-	$61,756	$63,917	$66,154	$68,470	$70,866	$73,346	$75,914	$78,571	$81,321	$84,167	**$724,481**
ANNUAL OPERATING COST - UTILITY EXPENSE	-	$399,289	$411,268	$423,606	$436,314	$449,404	$462,886	$476,772	$491,076	$505,808	$520,982	**$4,577,406**
TOTAL	22,466,345	$461,045	$475,185	$489,760	$504,784	$520,270	$536,232	$552,686	$569,646	$587,128	$605,149	**$27,768,232**

SCHEME C - "RENOVATION AND NEW": GEOTHERMAL VRF SYSTEM

YEAR	0	1	2	3	4	5	6	7	8	9	10	TOTAL
INSTALLATION COSTS	$21,574,951	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$21,574,951**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	-	$59,102	$61,171	$63,311	$65,527	$67,821	$70,195	$72,651	$75,194	$77,826	$80,550	**$693,348**
ANNUAL OPERATING COST - UTILITY EXPENSE	-	$382,131	$393,595	$405,403	$417,565	$430,092	$442,994	$456,284	$469,973	$484,072	$498,594	**$4,380,703**
TOTAL	21,574,951	$441,233	$454,765	$468,714	$483,092	$497,913	$513,189	$528,936	$545,167	$561,898	$579,144	**$26,649,002**

NIST Energy Price Indices and Discouint Factors for Life-Cycle Cost Analysis - 2012

Maintenance Cost Discount Rate = 3.5%

Utility Fuel Cost Discount Rate = 3.0%

LIFE CYCLE COST ANALYSIS

SCHEME A - "MAXIMUM RENOVATION": GEOTHERMAL VRF SYSTEM

YEAR	11	12	13	14	15	16	17	18	19	20	TOTAL
INSTALLATION COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$22,297,252**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	$85,059	$88,036	$91,117	$94,307	$97,607	$101,024	$104,559	$108,219	$112,007	$115,927	**$1,705,265**
ANNUAL OPERATING COST - UTILITY EXPENSE	$590,287	$607,995	$626,235	$645,022	$664,373	$684,304	$704,833	$725,978	$747,757	$770,190	**$11,802,237**
TOTAL	$675,346	$696,031	$717,352	$739,329	$761,980	$785,327	$809,392	$834,197	$859,764	$886,117	**$35,804,754**

SCHEME B - "ALL NEW": GEOTHERMAL VRF SYSTEM

YEAR	11	12	13	14	15	16	17	18	19	20	TOTAL
INSTALLATION COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$22,466,345**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	$87,113	$90,162	$93,317	$96,583	$99,964	$103,462	$107,084	$110,832	$114,711	$118,726	**$1,746,433**
ANNUAL OPERATING COST - UTILITY EXPENSE	$536,612	$552,710	$569,291	$586,370	$603,961	$622,080	$640,742	$659,965	$679,764	$700,156	**$10,729,056**
TOTAL	$623,724	$642,871	$662,608	$682,953	$703,925	$725,542	$747,826	$770,796	$794,474	$818,882	**$34,941,834**

SCHEME C - "RENOVATION AND NEW": GEOTHERMAL VRF SYSTEM

YEAR	11	12	13	14	15	16	17	18	19	20	TOTAL
INSTALLATION COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$21,574,951**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	$83,369	$86,287	$89,307	$92,433	$95,668	$99,016	$102,482	$106,069	$109,781	$113,624	**$1,671,384**
ANNUAL OPERATING COST - UTILITY EXPENSE	$513,552	$528,959	$544,827	$561,172	$578,007	$595,348	$613,208	$631,604	$650,552	$670,069	**$10,268,002**
TOTAL	$596,921	$615,246	$634,134	$653,605	$673,675	$694,364	$715,690	$737,673	$760,334	$783,693	**$33,514,337**

LIFE CYCLE COST ANALYSIS

SCHEME A - "MAXIMUM RENOVATION": GEOTHERMAL VRF SYSTEM

YEAR	21	22	23	24	25	26	27	28	29	30	TOTAL
INSTALLATION COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$22,297,252**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	$119,984	$124,184	$128,530	$133,029	$137,685	$142,504	$147,491	$152,653	$157,996	$163,526	**$2,114,986**
ANNUAL OPERATING COST - UTILITY EXPENSE	$793,296	$817,095	$841,607	$866,856	$892,861	$919,647	$947,237	$975,654	$1,004,923	$1,035,071	**$14,129,510**
TOTAL	$913,280	$941,278	$970,138	$999,884	$1,030,546	$1,062,151	$1,094,728	$1,128,307	$1,162,920	$1,198,597	**$38,541,748**

SCHEME B - "ALL NEW": GEOTHERMAL VRF SYSTEM

YEAR	21	22	23	24	25	26	27	28	29	30	TOTAL
INSTALLATION COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$22,466,345**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	$122,881	$127,182	$131,633	$136,240	$141,009	$145,944	$151,052	$156,339	$161,811	$167,474	**$2,166,045**
ANNUAL OPERATING COST - UTILITY EXPENSE	$721,161	$742,796	$765,080	$788,032	$811,673	$836,023	$861,104	$886,937	$913,545	$940,952	**$12,844,710**
TOTAL	$844,042	$869,978	$896,713	$924,272	$952,682	$981,967	$1,012,156	$1,043,276	$1,075,356	$1,108,426	**$37,477,100**

SCHEME C - "RENOVATION AND NEW": GEOTHERMAL VRF SYSTEM

YEAR	21	22	23	24	25	26	27	28	29	30	TOTAL
INSTALLATION COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$21,574,951**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	$117,600	$121,716	$125,976	$130,386	$134,949	$139,672	$144,561	$149,621	$154,857	$160,277	**$2,072,965**
ANNUAL OPERATING COST - UTILITY EXPENSE	$690,171	$710,876	$732,202	$754,168	$776,794	$800,097	$824,100	$848,823	$874,288	$900,517	**$12,292,740**
TOTAL	$807,771	$832,593	$858,179	$884,554	$911,743	$939,770	$968,661	$998,444	$1,029,145	$1,060,794	**$35,940,656**

LIFE CYCLE COST ANALYSIS

SCHEME A - "MAXIMUM RENOVATION": GEOTHERMAL VRF SYSTEM

YEAR	31	32	33	34	35	36	37	38	39	40	TOTAL
INSTALLATION COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$22,297,252**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	$169,250	$175,173	$181,304	$187,650	$194,218	$201,016	$208,051	$215,333	$222,869	$230,670	**$2,692,937**
ANNUAL OPERATING COST - UTILITY EXPENSE	$1,066,123	$1,098,107	$1,131,050	$1,164,982	$1,199,931	$1,235,929	$1,273,007	$1,311,197	$1,350,533	$1,391,049	**$17,257,171**
TOTAL	$1,235,373	$1,273,280	$1,312,355	$1,352,632	$1,394,149	$1,436,944	$1,481,058	$1,526,530	$1,573,402	$1,621,719	**$42,247,360**

SCHEME B - "ALL NEW": GEOTHERMAL VRF SYSTEM

YEAR	31	32	33	34	35	36	37	38	39	40	TOTAL
INSTALLATION COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$22,466,345**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	$173,336	$179,402	$185,681	$192,180	$198,907	$205,868	$213,074	$220,531	$228,250	$236,239	**$2,757,950**
ANNUAL OPERATING COST - UTILITY EXPENSE	$969,180	$998,256	$1,028,203	$1,059,049	$1,090,821	$1,123,546	$1,157,252	$1,191,969	$1,227,729	$1,264,560	**$15,687,971**
TOTAL	$1,142,516	$1,177,658	$1,213,885	$1,251,230	$1,289,728	$1,329,414	$1,370,326	$1,412,501	$1,455,978	$1,500,799	**$40,912,265**

SCHEME C - "RENOVATION AND NEW": GEOTHERMAL VRF SYSTEM

YEAR	31	32	33	34	35	36	37	38	39	40	TOTAL
INSTALLATION COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$21,574,951**
ANNUAL OPERATING COST - MAINTENANCE EXPENSE	$165,887	$171,693	$177,702	$183,922	$190,359	$197,022	$203,917	$211,055	$218,441	$226,087	**$2,639,434**
ANNUAL OPERATING COST - UTILITY EXPENSE	$927,532	$955,358	$984,019	$1,013,539	$1,043,946	$1,075,264	$1,107,522	$1,140,747	$1,174,970	$1,210,219	**$15,013,819**
TOTAL	$1,093,419	$1,127,051	$1,161,721	$1,197,461	$1,234,305	$1,272,286	$1,311,439	$1,351,802	$1,393,411	$1,436,306	**$39,228,204**

ANNUAL OPERATING COST - MAINTENANCE EXPENSE			
	SCHEME A	**SCHEME B**	**SCHEME C**
TOTAL BUILDING SF	402,000	411,705	394,013
MAINTENANCE COST PER SF	$0.15	$0.15	$0.15
TOTAL MAINTENANCE COST	$60,300.00	$61,755.75	$59,101.95

ANNUAL OPERATING COST - UTILITY EXPENSE			
YEAR	**SCHEME A**	**SCHEME B**	**SCHEME C**
TOTAL BUILDING SF	402,000	411,705	394,013
kWh/SF	8.9	7.9	7.9
ANNUAL ENERGY CONSUMPTION (KWH)	3,577,800	3,252,470	3,112,703
CURRENT PEPCO AVERAGE RATE ($/kWh)**	0.1228	0.1228	0.1228
TOTAL OPERATING COST	$439,229	$399,289	$382,131

** Current Rate as of Dec. 2, 2013 utilized. The average of the summer and winter rates were averaged to provide overall average rate.

Appendix iv

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD

FEASIBILITY STUDY COST ESTIMATE

Prepared for:

SHW GROUP
1014 MORTON STREET, SUITE 200
BALTIMORE, MD 21201

Prepared by:

5550 Sterrett Place, Suite 300
Columbia, MD 21044
(410) 740-1671

2014-276

May 9, 2014

TABLE OF CONTENTS	NO. OF PAGES

NOTES

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

May 9, 2014

NOTES

The following cost estimate for "High Point High School" has been developed from the Pdf drawings and schedules prepared by SHW Group Architects.

The project involves the demolition and renovation / new construction of a high school. There are three schemes; A, B & C. Each option involves a different level of renovation / new construction.

The level of pricing in this cost assessment is representative of current day costs of construction in the PG County, MD area assuming that the project will be procured by a general contractor.

The pricing of this cost estimate is based on the price DMS has seen in similar projects in the PG County & MD area.

The level of pricing assumes a fair and reasonable rate of return for overhead and profit for the general contractor and subcontractors and takes into consideration the present economic climate.

This cost estimate has been developed for comparative purposes ONLY and measurements are based upon approximate quantity surveys as detailed as possible relative to the level of design and available documentation. Where quantities are not available, assumptions have been made on historical references to similar type projects recently estimated by DMS.

This cost estimate is an opinion of probable costs based on fair market value, and is not a prediction of the anticipated low bid. DMS has no control over the costs of labor, material, the GC's or any subcontractor's method of determining price or competitive bidding and market conditions.

Contingency: We include a design contingency to cover items that are not designed or included in the estimate for each scheme as follows:

Scheme A	5%
Scheme B	4%
Scheme C	4%

Escalation: We include an escalation allowance of 2.5% per annum to the midpoint of construction. The escalation allowances for each scheme are therefore:

Scheme A	May 2018 midpoint	7.5% escalation allowance
Scheme B	July 2017 midpoint	5.5% escalation allowance
Scheme C	July 2017 midpoint	5.5% escalation allowance

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

May 9, 2014

NOTES

Exclusions: We do not include the following items in this estimate:

- Design Fees or other consultant fees
- Legal fees
- Impact or other Government costs
- Loose Furniture, Fittings and Furnishings
- Artwork
- Costs of owners on site representation during the course of construction
- Costs resulting from owner requested changes or design changes arising during the course of construction
- Costs arising from "sole source" procurement requirements
- Hazmat soils testing/investigation
- Utility company charges
- Temporary classrooms "swing space"
- Hazardous waste handling/removal/abatement
- Life cycle costing
- AV / Telecoms equipment

MASTER SUMMARY

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

MASTER SUMMARY

SCHEME A: MAX RENOVATION	**$115,269,692**	**$286.12 / GSF**
NEW BUILDING AREA: 199,840 SF		
RENOVATED BUILDING AREA: 203,031 SF		
TOTAL BUILDING AREA: 402,871 SF		
SCHEME B: ALL NEW	**$116,935,122**	**$284.03 / GSF**
NEW BUILDING AREA: 411,705 SF		
RENOVATED BUILDING AREA: 0 SF		
TOTAL BUILDING AREA: 411,705 SF		
SCHEME C: HYBRID	**$113,035,602**	**$286.88 / GSF**
NEW BUILDING AREA: 371,330 SF		
RENOVATED BUILDING AREA: 22,683 SF		
TOTAL BUILDING AREA: 394,013 SF		

ADD ALTERNATE (INCLUDING MARK-UPS @ 20%)

PV PANELS: 300 KW SYSTEM	**$2,430,000**
MEMA REQUIREMENTS: ATS & PANEL	**$36,000**

DEDUCT ALTERNATE (INCLUDING MARK-UPS @ 20%)

GREEN ROOF DEDUCT 40,000 SF	**-$1,440,000**

5/9/2014

SCHEME A: MAX RENOVATION

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
DIVISION SUMMARY

NEW BUILDING AREA	199,840 GSF
RENOVATED BUILDING AREA	203,031 GSF
TOTAL BUILDING AREA	402,871 GSF

1 GENERAL CONDITIONS		$4,500,000	$11.17 / GSF
2 SITEWORK		$13,134,786	$32.60 / GSF
3 CONCRETE		$3,257,554	$8.09 / GSF
4 MASONRY		$4,877,290	$12.11 / GSF
5 METALS		$5,208,651	$12.93 / GSF
6 WOODS, PLASTICS & COMPOSITES		$80,574	$0.20 / GSF
7 THERMAL & MOISTURE PROTECTION		$6,105,702	$15.16 / GSF
8 DOORS		$5,014,088	$12.45 / GSF
9 FINISHES		$5,438,406	$13.50 / GSF
10 SPECIALTIES		$1,496,866	$3.72 / GSF
11 EQUIPMENT		$1,050,000	$2.61 / GSF
12 FURNISHINGS		$1,777,509	$4.41 / GSF
13 SPECIAL CONSTRUCTION		$1,611,484	$4.00 / GSF
14 CONVEYING		$190,000	$0.47 / GSF
15 PLUMBING		$3,926,399	$9.75 / GSF
15 MECHANICAL		$22,297,252	$55.35 / GSF
16 ELECTRICAL		$13,568,466	$33.68 / GSF
SUBTOTAL		**$93,535,027**	**$232.17 / GSF**
PHASING PREMIUM	**3.0%**	**$2,806,051**	**$6.97 / GSF**
SUBTOTAL		$96,341,078	
DESIGN CONTINGENCY	**5.0%**	**$4,817,054**	**$11.96 / GSF**
SUBTOTAL		$101,158,132	
ESCALATION	**7.5%**	**$7,586,860**	**$18.83 / GSF**
SUBTOTAL		$108,744,992	
BONDS / INSURANCE	**2.0%**	**$2,174,900**	**$5.40 / GSF**
SUBTOTAL		$110,919,892	
CONTRACTOR'S OVERHEAD & PROFIT	**4.0%**	**$4,349,800**	**$10.80 / GSF**
SUBTOTAL		$115,269,692	
TOTAL		**$115,269,692**	**$286.12 / GSF**

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
01 GENERAL REQUIREMENTS						
Project Management & Coordination						
personnel / facilities / equipment	45	mth	$100,000.00	$4,500,000		
					$4,500,000	
01 GENERAL REQUIREMENTS TOTAL						$4,500,000
02 SITEWORK						
Site Demolition						
demolish existing site hardscaping / landscaping	900,000	sf	$0.30	$270,000		
					$270,000	
Building Demolition						
demolish existing building complete	110,300	sf	$10.00	$1,103,000		
demolish existing building for full renovation	203,031	sf	$6.00	$1,218,186		
					$2,321,186	
Earth Moving						
site cut / fill	900,000	sf	$0.30	$270,000		
					$270,000	
Erosion Control						
silt fence	2,000	lf	$5.00	$10,000		
construction fencing/protection	4,000	lf	$12.00	$48,000		
maintain erosion control devices	36	mos	$3,000.00	$108,000		
					$166,000	
Surfacing						
asphalt pavement	352,270	sf	$3.00	$1,056,810		
curb & gutter	8,045	lf	$22.00	$176,990		
concrete paving	60,000	sf	$6.50	$390,000		
decorative paving	5,000	sf	$20.00	$100,000		
athletic track	50,000	sf	$6.00	$300,000		
football field, synthetic turf	100,000	sf	$12.00	$1,200,000		
baseball field, large, sod	150,000	sf	$2.50	$375,000		
baseball field, small, sod	48,000	sf	$2.50	$120,000		
basketball courts	31,200	sf	$6.00	$187,200		
tennis courts	28,600	sf	$6.00	$171,600		
					$4,077,600	
Site Improvements						
bleachers @ athletic track	20,000	sf	$20.00	$400,000		
concessions building	4,000	sf	$150.00	$600,000		
tickets building	4,000	sf	$120.00	$480,000		

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
exterior sports amenities / equipment	1	ls	$250,000.00	$250,000		
fencing	10,000	lf	$50.00	$500,000		
site walls	1	ls	$100,000.00	$100,000		
site furnishings	1	ls	$100,000.00	$100,000		
					$2,430,000	
Planting						
planting	1	ls	$150,000.00	$150,000		
					$150,000	
Water Utilities						
water / fire service	1	ls	$50,000.00	$50,000		
					$50,000	
Sanitary Sewer System						
sanitary sewer service	1	ls	$50,000.00	$50,000		
					$50,000	
Storm Water, Site						
micro-bioretention ponds, planters	70,000	sf	$15.00	$1,050,000		
storm drainage piping & structures	1	ls	$200,000.00	$200,000		
underground detention facility	1	ls	$2,000,000.00	$2,000,000		
					$3,250,000	
Electrical Service						
electrical service	1	ls	$100,000.00	$100,000		
					$100,000	
02 SITEWORK TOTAL						$13,134,786
03 CONCRETE						
Perimeter Footings & Foundation Walls						
excavation	2,918	cy	$30.00	$87,547		
forms	22,512	sf	$5.00	$112,560		
reinforcement	46,900	lbs	$0.80	$37,520		
concrete	625	cy	$200.00	$125,067		
waterproofing	11,256	sf	$3.00	$33,768		
foundation drainage system	2,814	lf	$25.00	$70,350		
					$466,811	
Spread Footings & Piers (allow 266 ea @6'x6'x1.5')						
excavation	1,448	cy	$30.00	$43,447		
forms	15,960	sf	$5.00	$79,800		
reinforcement	49,653	lbs	$0.80	$39,723		
concrete	621	cy	$200.00	$124,133		
					$287,103	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Concrete Slab-on-Grade						
fine grade	102,421	sf	$0.20	$20,484		
gravel below slab- 6"	2,845	tons	$28.00	$79,661		
wire mesh	102,421	sf	$0.76	$77,840		
10mil vapor barrier	102,421	sf	$0.18	$18,436		
concrete 5" thick	1,581	cy	$200.00	$316,114		
concrete slab thickening	152	cy	$180.00	$27,280		
finish concrete	102,421	sf	$0.50	$51,211		
cure concrete	102,421	sf	$0.15	$15,363		
screeds/control joints	102,421	sf	$0.20	$20,484		
					$626,873	
Elevated Concrete Slab						
floor deck, @ new buildings	97,419	sf	$3.00	$292,257		
wire mesh	97,419	sf	$0.70	$68,193		
concrete, 4" thick	1,203	cy	$200.00	$240,541		
finish concrete	97,419	sf	$1.00	$97,419		
cure concrete	97,419	sf	$0.30	$29,226		
screeds/joints	97,419	sf	$0.20	$19,484		
					$747,120	
Roof Construction						
roof deck, @ new buildings	102,421	sf	$2.50	$256,053		
wire mesh	102,421	sf	$0.70	$71,695		
concrete, 3" thick	948	cy	$200.00	$189,669		
finish concrete	102,421	sf	$1.00	$102,421		
cure concrete	102,421	sf	$0.30	$30,726		
screeds/joints	102,421	sf	$0.20	$20,484		
					$671,047	
Other Concrete						
stair flights, (floor to floor), w/ hand/guardrails	17	ea	$25,000.00	$425,000		
equipment pads	800	sf	$12.00	$9,600		
elevator pit	2	ea	$12,000.00	$24,000		
					$458,600	
03 CONCRETE TOTAL						$3,257,554
04 MASONRY						
Masonry, Exterior						
brick (30% of 153,528 sf exterior skin)	46,058	sf	$22.00	$1,013,285		
CMU back-up to metal panel & brick skin	76,764	sf	$17.00	$1,304,988		
repoint existing auditorium / gym walls	32,100	sf	$12.00	$385,200		
caulking/sealants to brick	46,058	sf	$0.30	$13,818		
					$2,717,290	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Masonry, Interior						
interior CMU partitions, 12'h, allow 75%	180,000	sf	$12.00	$2,160,000		
					$2,160,000	
04 MASONRY TOTAL						$4,877,290
05 METALS						
Structural Steel						
lbs/sf	1,199	tons	$3,400.00	$4,076,736		
lbs/sf	203	tons	$3,400.00	$690,305		
base plates	266	ea	$400.00	$106,400		
anchor bolts	1,064	ea	$50.00	$53,200		
					$4,926,641	
Metal Fabrications						
guardrails / handrails	402,871	sf	$0.70	$282,010		
					$282,010	
05 METALS TOTAL						$5,208,651
06 WOODS, PLASTICS & COMPOSITES						
Rough Carpentry						
rough carpentry (plywood backboard)	402,871	sf	$0.20	$80,574		
					$80,574	
06 WOODS, PLASTICS & COMPOSITES TOTAL						$80,574
07 THERMAL & MOISTURE PROTECTION						
Panels & Sidings						
skin)	46,058	sf	$40.00	$1,842,336		
canopies	2,000	sf	$100.00	$200,000		
sun shades, exterior	2,000	lf	$150.00	$300,000		
					$2,342,336	
Roofing						
roofing	150,694	sf	$13.00	$1,959,022		
green roof	40,000	sf	$30.00	$1,200,000		
coping / fascia / flashings @ perimeter	5,544	lf	$40.00	$221,760		
equipment pads, dunnage	1	ls	$20,000.00	$20,000		
					$3,400,782	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Fire & Smoke Protection						
fireproofing	402,871	sf	$0.60	$241,723		
					$241,723	
Joint Protection						
caulking/sealants	402,871	sf	$0.30	$120,861		
					$120,861	
07 THERMAL & MOISTURE PROTECTION TOTAL						$6,105,702
08 DOORS & WINDOWS						
Doors & Frames						
interior single doors, HM/WD	400	ea	$1,200.00	$480,000		
interior double doors, HM/WD	200	ea	$2,200.00	$440,000		
					$920,000	
Exterior Doors						
double doors	30	ea	$4,500.00	$135,000		
automatic door controls	30	ea	$3,500.00	$105,000		
					$240,000	
Curtain Walls, Windows, Storefront & Glazing						
curtainwall (15% of 153,528 sf exterior skin)	23,029	sf	$80.00	$1,842,336		
storefront (15% of 153,528 sf exterior skin)	23,029	sf	$60.00	$1,381,752		
interior glazing	15,750	sf	$40.00	$630,000		
					$3,854,088	
08 DOORS & WINDOWS TOTAL						$5,014,088
09 FINISHES						
Plaster & Gypsum Board						
interior GWB w/ furring	436,764	sf	$4.00	$1,747,056		
interior stud partitions, 12'h, allow 25%	60,000	sf	$9.00	$540,000		
					$2,287,056	
Ceilings						
ceilings	402,871	sf	$5.00	$2,014,355		
					$2,014,355	
Flooring						
floor finishes	38,273	sf	$4.50	$172,227		
polished concrete floor	20,144	sf	$10.00	$201,436		
					$373,663	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Wall Finishes / Painting						
paint walls	556,764	sf	$0.65	$361,897		
special wall finishes	402,871	sf	$0.50	$201,436		
ceramic wall tile	20,000	sf	$10.00	$200,000		
					$763,332	
09 FINISHES TOTAL						$5,438,406
10 SPECIALTIES						
Visual Display Surfaces						
signage	402,871	sf	$0.30	$120,861		
					$120,861	
Interior Specialties						
acoustical panels @ auditorium	1	ls	$300,000.00	$300,000		
special interiors to auditorium	1	ls	$200,000.00	$200,000		
toilet accessories	402,871	sf	$0.30	$120,861		
fire extinguishers and cabinets	402,871	sf	$0.05	$20,144		
lockers	2,450	ea	$300.00	$735,000		
					$1,376,005	
10 SPECIALTIES TOTAL						$1,496,866
11 EQUIPMENT						
Equipment						
kitchen / cafeteria equipment	1	ls	$700,000.00	$700,000		
interior physical education equipment	1	ls	$50,000.00	$50,000		
auditorium lighting, audio, equipment	1	ls	$300,000.00	$300,000		
					$1,050,000	
11 EQUIPMENT TOTAL						$1,050,000
12 FURNISHINGS						
Window Shades						
window shades, manual, storefront & int glazing	38,779	sf	$5.00	$193,896		
					$193,896	
Casework / Furniture						
built-in casework	402,871	sf	$3.00	$1,208,613		
physical education seating	1	ls	$100,000.00	$100,000		
re-upholster existing auditorium seating	1,500	seat	$150.00	$225,000		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
auditorium stage	1	ls	$50,000.00	$50,000		
					$1,583,613	
12 FURNISHINGS TOTAL						$1,777,509
13 SPECIAL CONSTRUCTION						
Fire Suppression						
sprinkler system	402,871	sf	$4.00	$1,611,484		
					$1,611,484	
13 SPECIAL CONSTRUCTION TOTAL						$1,611,484
14 CONVEYING EQUIPMENT						
Conveying Equipment						
passenger elevator (2 ea)	6	stop	$30,000.00	$180,000		
elevator cab finish	2	ea	$5,000.00	$10,000		
					$190,000	
14 CONVEYING EQUIPMENT TOTAL						$190,000
15 PLUMBING						
Domestic Water Piping						
domestic water piping	402,871	sf	$3.00	$1,208,613		
					$1,208,613	
Sanitary & Vent System						
sanitary piping	402,871	sf	$2.00	$805,742		
					$805,742	
Storm Drainage System						
storm water drainage	402,871	sf	$1.00	$402,871		
					$402,871	
Gas Piping						
gas piping	402,871	sf	$0.20	$80,574		
					$80,574	
Plumbing Equipment						
plumbing equipment	402,871	sf	$1.00	$402,871		
misc. valves	402,871	sf	$0.50	$201,436		
					$604,307	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Plumbing Fixtures						
toilet	80	ea	$2,200.00	$176,000		
urinal	50	ea	$1,800.00	$90,000		
round sink	80	ea	$1,500.00	$120,000		
drinking fountain	16	ea	$3,500.00	$56,000		
mop sink allow	6	ea	$3,500.00	$21,000		
lab / classroom sinks	80	ea	$1,500.00	$120,000		
floor drains	50	ea	$500.00	$25,000		
roof drains	30	ea	$500.00	$15,000		
					$623,000	
Other Plumbing						
commissioning support	200	hrs	$100.00	$20,000		
testing	402,871	sf	$0.10	$40,287		
penetrations/firestopping	402,871	sf	$0.35	$141,005		
					$201,292	
15 PLUMBING TOTAL						$3,926,399
15 MECHANICAL						
HVAC Piping						
HVAC piping	402,871	sf	$8.00	$3,222,968		
valves/accessories	402,871	sf	$1.00	$402,871		
					$3,625,839	
HVAC Air Distribution						
ductwork allow, 1.2 lbs/sf	483,445	lbs	$8.00	$3,867,562		
ductwork linings / insulation	338,412	sf	$2.60	$879,870		
duct accessories	402,871	sf	$2.00	$805,742		
					$5,553,174	
HVAC Equipment						
HVAC equipment	402,871	sf	$18.00	$7,251,678		
geothermal wells	630	ea	$2,400	$1,512,000		
					$8,763,678	
Other HVAC						
controls, DDC	402,871	sf	$8.00	$3,222,968		
vibration isolation/control	402,871	sf	$0.30	$120,861		
overhead, rigging, start-up	1	ls	$60,000.00	$60,000		
coordination drawings	120	hrs	$100.00	$12,000		
temporary filters/controls	1	ls	$25,000.00	$25,000		
testing & balancing	402,871	sf	$0.80	$322,297		
cutting/patching/fire stopping	402,871	sf	$0.50	$201,436		
commissioning support	300	hrs	$100.00	$30,000		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
mechanical general conditions	45	mos	$8,000.00	$360,000		
					$4,354,562	
15 MECHANICAL TOTAL						$22,297,252
16 ELECTRICAL						
Electrical Equipment						
electrical equipment	402,871	sf	$7.00	$2,820,097		
					$2,820,097	
Electrical Power Devices						
branch circuit device allowance	402,871	sf	$6.00	$2,417,226		
mechanical equipment connections	402,871	sf	$2.00	$805,742		
					$3,222,968	
Interior Lighting						
lighting	402,871	sf	$7.00	$2,820,097		
lighting controls	402,871	sf	$1.20	$483,445		
					$3,303,542	
Exterior Lighting						
new floodlights for sports fields	4	ea	$60,000.00	$240,000		
street lighting	50	ea	$6,000.00	$300,000		
					$540,000	
Other Electrical						
lightning protection/grounding system	402,871	sf	$0.12	$48,747		
grounding	402,871	sf	$0.30	$120,861		
temporary power/lighting	402,871	sf	$0.30	$120,861		
penetrations/firestopping	402,871	sf	$0.25	$100,718		
testing	402,871	sf	$0.10	$40,287		
commissioning support	300	hrs	$100.00	$30,000		
electrical general conditions	45	mos	$8,000.00	$360,000		
					$821,475	
Data / Voice Communications						
telecommunication	402,871	sf	$2.00	$805,742		
					$805,742	
Audio-Video Communications						
audio visual system	402,871	sf	$1.00	$402,871		
					$402,871	
Electronic Security						
security system	402,871	sf	$1.10	$443,158		
					$443,158	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME A: MAX RENOVATION
ESTIMATE DETAIL

ITEM		QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Electronic Fire Alarm							
	fire alarm system	402,871	sf	$3.00	$1,208,613		
						$1,208,613	
16 ELECTRICAL TOTAL							$13,568,466

SCHEME B: ALL NEW

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
DIVISION SUMMARY

NEW BUILDING AREA	411,705 GSF
RENOVATED BUILDING AREA	0 GSF
TOTAL BUILDING AREA	411,705 GSF

1 GENERAL CONDITIONS		$3,600,000	$8.74 / GSF
2 SITEWORK		$14,429,464	$35.05 / GSF
3 CONCRETE		$5,684,899	$13.81 / GSF
4 MASONRY		$4,172,918	$10.14 / GSF
5 METALS		$9,015,176	$21.90 / GSF
6 WOODS, PLASTICS & COMPOSITES		$82,341	$0.20 / GSF
7 THERMAL & MOISTURE PROTECTION		$5,002,320	$12.15 / GSF
8 DOORS		$4,572,836	$11.11 / GSF
9 FINISHES		$7,030,369	$17.08 / GSF
10 SPECIALTIES		$1,502,608	$3.65 / GSF
11 EQUIPMENT		$1,050,000	$2.55 / GSF
12 FURNISHINGS		$2,013,252	$4.89 / GSF
13 SPECIAL CONSTRUCTION		$1,646,820	$4.00 / GSF
14 CONVEYING		$190,000	$0.46 / GSF
15 PLUMBING		$3,998,396	$9.71 / GSF
15 MECHANICAL		$22,466,345	$54.57 / GSF
16 ELECTRICAL		$14,085,598	$34.21 / GSF
SUBTOTAL		**$100,543,340**	**$244.21 / GSF**
DESIGN CONTINGENCY	**4.0%**	**$4,021,734**	**$9.77 / GSF**
SUBTOTAL		$104,565,074	
ESCALATION	**5.5%**	**$5,751,079**	**$13.97 / GSF**
SUBTOTAL		$110,316,153	
BONDS / INSURANCE	**2.0%**	**$2,206,323**	**$5.36 / GSF**
SUBTOTAL		$112,522,476	
CONTRACTOR'S OVERHEAD & PROFIT	**4.0%**	**$4,412,646**	**$10.72 / GSF**
SUBTOTAL		$116,935,122	
TOTAL		**$116,935,122**	**$284.03 / GSF**

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
01 GENERAL REQUIREMENTS						
Project Management & Coordination						
personnel / facilities / equipment	24	mth	$150,000.00	$3,600,000		
					$3,600,000	
01 GENERAL REQUIREMENTS TOTAL						$3,600,000
02 SITEWORK						
Site Demolition						
demolish existing site hardscaping / landscaping	900,000	sf	$0.30	$270,000		
					$270,000	
Building Demolition						
demolish existing building complete	313,331	sf	$10.00	$3,133,310		
					$3,133,310	
Earth Moving						
site cut / fill	900,000	sf	$0.50	$450,000		
basement excavation	1	ls	$300,000.00	$300,000		
					$750,000	
Erosion Control						
silt fence	2,000	lf	$5.00	$10,000		
construction fencing/protection	4,000	lf	$12.00	$48,000		
maintain erosion control devices	24	mos	$3,000.00	$72,000		
					$130,000	
Surfacing						
asphalt pavement	330,400	sf	$3.00	$991,200		
curb & gutter	10,507	lf	$22.00	$231,154		
concrete paving	60,000	sf	$6.50	$390,000		
decorative paving	5,000	sf	$20.00	$100,000		
athletic track	50,000	sf	$6.00	$300,000		
football field, synthetic turf	100,000	sf	$12.00	$1,200,000		
baseball field, large, sod	150,000	sf	$2.50	$375,000		
baseball field, small, sod	48,000	sf	$2.50	$120,000		
basketball courts	31,200	sf	$6.00	$187,200		
tennis courts	28,600	sf	$6.00	$171,600		
					$4,066,154	
Site Improvements						
bleachers @ athletic track	20,000	sf	$20.00	$400,000		
concessions building	4,000	sf	$150.00	$600,000		
tickets building	4,000	sf	$120.00	$480,000		

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
exterior sports amenities / equipment	1	ls	$250,000.00	$250,000		
fencing	10,000	lf	$50.00	$500,000		
site walls	1	ls	$100,000.00	$100,000		
site furnishings	1	ls	$100,000.00	$100,000		
					$2,430,000	
Planting						
planting	1	ls	$150,000.00	$150,000		
					$150,000	
Water Utilities						
water / fire service	1	ls	$50,000.00	$50,000		
					$50,000	
Sanitary Sewer System						
sanitary sewer service	1	ls	$50,000.00	$50,000		
					$50,000	
Storm Water, Site						
micro-bioretention ponds, planters	70,000	sf	$15.00	$1,050,000		
storm drainage piping & structures	1	ls	$200,000.00	$200,000		
underground detention facility	1	ls	$2,000,000.00	$2,000,000		
					$3,250,000	
Electrical Service						
electrical service	1	ls	$150,000.00	$150,000		
					$150,000	
02 SITEWORK TOTAL						$14,429,464
03 CONCRETE						
Perimeter Footings & Foundation Walls						
excavation	4,047	cy	$30.00	$121,396		
forms	31,216	sf	$5.00	$156,080		
reinforcement	65,033	lbs	$0.80	$52,027		
concrete	867	cy	$200.00	$173,422		
waterproofing	15,608	sf	$3.00	$46,824		
foundation drainage system	3,902	lf	$25.00	$97,550		
					$647,298	
Spread Footings & Piers (allow 547 ea @6'x6'x1.5')						
excavation	2,978	cy	$30.00	$89,343		
forms	32,820	sf	$5.00	$164,100		
reinforcement	102,107	lbs	$0.80	$81,685		
concrete	1,276	cy	$200.00	$255,267		
					$590,395	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Concrete Slab-on-Grade						
fine grade	116,987	sf	$0.20	$23,397		
gravel below slab- 6"	3,250	tons	$28.00	$90,990		
wire mesh	116,987	sf	$0.76	$88,910		
10mil vapor barrier	116,987	sf	$0.18	$21,058		
concrete 5" thick	1,805	cy	$200.00	$361,071		
concrete slab thickening	289	cy	$180.00	$52,027		
finish concrete	116,987	sf	$0.50	$58,494		
cure concrete	116,987	sf	$0.15	$17,548		
screeds/control joints	116,987	sf	$0.20	$23,397		
					$736,892	
Elevated Concrete Slab						
floor deck, @ new buildings	294,718	sf	$3.00	$884,154		
wire mesh	294,718	sf	$0.70	$206,303		
concrete, 4" thick	3,638	cy	$200.00	$727,699		
finish concrete	294,718	sf	$1.00	$294,718		
cure concrete	294,718	sf	$0.30	$88,415		
screeds/joints	294,718	sf	$0.20	$58,944		
					$2,260,232	
Roof Construction						
roof deck, @ new buildings	116,987	sf	$2.50	$292,468		
wire mesh	116,987	sf	$0.70	$81,891		
concrete, 3" thick	1,083	cy	$200.00	$216,643		
finish concrete	116,987	sf	$1.00	$116,987		
cure concrete	116,987	sf	$0.30	$35,096		
screeds/joints	116,987	sf	$0.20	$23,397		
					$766,481	
Other Concrete						
stair flights, (floor to floor), w/ hand/guardrails	10	ea	$25,000.00	$250,000		
basement concrete walls	20,000	sf	$20.00	$400,000		
equipment pads	800	sf	$12.00	$9,600		
elevator pit	2	ea	$12,000.00	$24,000		
					$683,600	
03 CONCRETE TOTAL						$5,684,899
04 MASONRY						
Masonry, Exterior						
brick (30% of 165,645 sf exterior skin)	39,755	sf	$22.00	$874,606		
CMU back-up to metal panel & brick skin	66,258	sf	$17.00	$1,126,386		
caulking/sealants to brick	39,755	sf	$0.30	$11,926		
					$2,012,918	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Masonry, Interior						
interior CMU partitions, 12'h, allow 75%	180,000	sf	$12.00	$2,160,000		
					$2,160,000	
04 MASONRY TOTAL						$4,172,918
05 METALS						
Structural Steel						
lbs/sf	2,470	tons	$3,400.00	$8,398,782		
base plates	547	ea	$400.00	$218,800		
anchor bolts	2,188	ea	$50.00	$109,400		
					$8,726,982	
Metal Fabrications						
guardrails / handrails	411,705	sf	$0.70	$288,194		
					$288,194	
05 METALS TOTAL						$9,015,176
06 WOODS, PLASTICS & COMPOSITES						
Rough Carpentry						
rough carpentry (plywood backboard)	411,705	sf	$0.20	$82,341		
					$82,341	
06 WOODS, PLASTICS & COMPOSITES TOTAL						$82,341
07 THERMAL & MOISTURE PROTECTION						
Panels & Sidings						
skin)	39,755	sf	$40.00	$1,590,192		
canopies	2,000	sf	$100.00	$200,000		
sun shades, exterior	2,000	lf	$150.00	$300,000		
					$2,090,192	
Roofing						
roofing	76,987	sf	$13.00	$1,000,831		
green roof	40,000	sf	$30.00	$1,200,000		
coping / fascia / flashings @ perimeter	3,902	lf	$40.00	$156,080		
equipment pads, dunnage	1	ls	$20,000.00	$20,000		
					$2,376,911	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Fire & Smoke Protection						
fireproofing	411,705	sf	$1.00	$411,705		
					$411,705	
Joint Protection						
caulking/sealants	411,705	sf	$0.30	$123,512		
					$123,512	
07 THERMAL & MOISTURE PROTECTION TOTAL						$5,002,320
08 DOORS & WINDOWS						
Doors & Frames						
interior single doors, HM/WD	400	ea	$1,200.00	$480,000		
interior double doors, HM/WD	200	ea	$2,200.00	$440,000		
					$920,000	
Exterior Doors						
double doors	30	ea	$4,500.00	$135,000		
automatic door controls	30	ea	$3,500.00	$105,000		
					$240,000	
Curtain Walls, Windows, Storefront & Glazing						
curtainwall (15% of 132,516 sf exterior skin)	19,877	sf	$80.00	$1,590,192		
storefront (15% of 132,516 sf exterior skin)	19,877	sf	$60.00	$1,192,644		
interior glazing	15,750	sf	$40.00	$630,000		
					$3,412,836	
08 DOORS & WINDOWS TOTAL						$4,572,836
09 FINISHES						
Plaster & Gypsum Board						
interior GWB w/ furring	426,258	sf	$4.00	$1,705,032		
interior stud partitions, 12'h, allow 25%	60,000	sf	$9.00	$540,000		
					$2,245,032	
Ceilings						
ceilings	411,705	sf	$5.00	$2,058,525		
					$2,058,525	
Flooring						
floor finishes	391,120	sf	$4.50	$1,760,039		
polished concrete floor	20,585	sf	$10.00	$205,853		
					$1,965,891	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Wall Finishes / Painting						
paint walls	546,258	sf	$0.65	$355,068		
special wall finishes	411,705	sf	$0.50	$205,853		
ceramic wall tile	20,000	sf	$10.00	$200,000		
					$760,920	
09 FINISHES TOTAL						$7,030,369
10 SPECIALTIES						
Visual Display Surfaces						
signage	411,705	sf	$0.30	$123,512		
					$123,512	
Interior Specialties						
acoustical panels @ auditorium	1	ls	$300,000.00	$300,000		
special interiors to auditorium	1	ls	$200,000.00	$200,000		
toilet accessories	411,705	sf	$0.30	$123,512		
fire extinguishers and cabinets	411,705	sf	$0.05	$20,585		
lockers	2,450	ea	$300.00	$735,000		
					$1,379,097	
10 SPECIALTIES TOTAL						$1,502,608
11 EQUIPMENT						
Equipment						
kitchen / cafeteria equipment	1	ls	$700,000.00	$700,000		
interior physical education equipment	1	ls	$50,000.00	$50,000		
auditorium lighting, audio, equipment	1	ls	$300,000.00	$300,000		
					$1,050,000	
11 EQUIPMENT TOTAL						$1,050,000
12 FURNISHINGS						
Window Shades						
window shades, manual, storefront & int glazing	35,627	sf	$5.00	$178,137		
					$178,137	
Casework / Furniture						
built-in casework	411,705	sf	$3.00	$1,235,115		
physical education seating	1	ls	$100,000.00	$100,000		
auditorium seating	1,500	seat	$300.00	$450,000		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
auditorium stage	1	ls	$50,000.00	$50,000		
					$1,835,115	
12 FURNISHINGS TOTAL						$2,013,252
13 SPECIAL CONSTRUCTION						
Fire Suppression						
sprinkler system	411,705	sf	$4.00	$1,646,820		
					$1,646,820	
13 SPECIAL CONSTRUCTION TOTAL						$1,646,820
14 CONVEYING EQUIPMENT						
Conveying Equipment						
passenger elevator (2 ea)	6	stop	$30,000.00	$180,000		
elevator cab finish	2	ea	$5,000.00	$10,000		
					$190,000	
14 CONVEYING EQUIPMENT TOTAL						$190,000
15 PLUMBING						
Domestic Water Piping						
domestic water piping	411,705	sf	$3.00	$1,235,115		
					$1,235,115	
Sanitary & Vent System						
sanitary piping	411,705	sf	$2.00	$823,410		
					$823,410	
Storm Drainage System						
storm water drainage	411,705	sf	$1.00	$411,705		
					$411,705	
Gas Piping						
gas piping	411,705	sf	$0.20	$82,341		
					$82,341	
Plumbing Equipment						
plumbing equipment	411,705	sf	$1.00	$411,705		
misc. valves	411,705	sf	$0.50	$205,853		
					$617,558	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Plumbing Fixtures						
toilet	80	ea	$2,200.00	$176,000		
urinal	50	ea	$1,800.00	$90,000		
round sink	80	ea	$1,500.00	$120,000		
drinking fountain	16	ea	$3,500.00	$56,000		
mop sink allow	6	ea	$3,500.00	$21,000		
lab / classroom sinks	80	ea	$1,500.00	$120,000		
floor drains	50	ea	$500.00	$25,000		
roof drains	30	ea	$500.00	$15,000		
					$623,000	
Other Plumbing						
commissioning support	200	hrs	$100.00	$20,000		
testing	411,705	sf	$0.10	$41,171		
penetrations/firestopping	411,705	sf	$0.35	$144,097		
					$205,267	
15 PLUMBING TOTAL						$3,998,396
15 MECHANICAL						
HVAC Piping						
HVAC piping	411,705	sf	$8.00	$3,293,640		
valves/accessories	411,705	sf	$1.00	$411,705		
					$3,705,345	
HVAC Air Distribution						
ductwork allow, 1.2 lbs/sf	494,046	lbs	$8.00	$3,952,368		
ductwork linings / insulation	345,832	sf	$2.60	$899,164		
duct accessories	411,705	sf	$2.00	$823,410		
					$5,674,942	
HVAC Equipment						
HVAC equipment	411,705	sf	$18.00	$7,410,690		
geothermal wells	565	ea	$2,400	$1,356,000		
					$8,766,690	
Other HVAC						
controls, DDC	411,705	sf	$8.00	$3,293,640		
vibration isolation/control	411,705	sf	$0.30	$123,512		
overhead, rigging, start-up	1	ls	$60,000.00	$60,000		
coordination drawings	120	hrs	$100.00	$12,000		
temporary filters/controls	1	ls	$25,000.00	$25,000		
testing & balancing	411,705	sf	$0.80	$329,364		
cutting/patching/fire stopping	411,705	sf	$0.50	$205,853		
commissioning support	300	hrs	$100.00	$30,000		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
mechanical general conditions	24	mos	$10,000.00	$240,000		
					$4,319,368	
15 MECHANICAL TOTAL						$22,466,345
16 ELECTRICAL						
Electrical Equipment						
electrical equipment	411,705	sf	$7.00	$2,881,935		
					$2,881,935	
Electrical Power Devices						
branch circuit device allowance	411,705	sf	$6.00	$2,470,230		
mechanical equipment connections	411,705	sf	$2.00	$823,410		
					$3,293,640	
Interior Lighting						
lighting	411,705	sf	$7.00	$2,881,935		
lighting controls	411,705	sf	$1.20	$494,046		
					$3,375,981	
Exterior Lighting						
floodlights for sports fields	10	ea	$60,000.00	$600,000		
street lighting	50	ea	$6,000.00	$300,000		
					$900,000	
Other Electrical						
lightning protection/grounding system	411,705	sf	$0.12	$49,816		
grounding	411,705	sf	$0.30	$123,512		
temporary power/lighting	411,705	sf	$0.30	$123,512		
penetrations/firestopping	411,705	sf	$0.25	$102,926		
testing	411,705	sf	$0.10	$41,171		
commissioning support	300	hrs	$100.00	$30,000		
electrical general conditions	24	mos	$10,000.00	$240,000		
					$710,936	
Data / Voice Communications						
telecommunication	411,705	sf	$2.00	$823,410		
					$823,410	
Audio-Video Communications						
audio visual system	411,705	sf	$1.00	$411,705		
					$411,705	
Electronic Security						
security system	411,705	sf	$1.10	$452,876		
					$452,876	

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME B: ALL NEW
ESTIMATE DETAIL

ITEM		QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
Electronic Fire Alarm							
	fire alarm system	411,705	sf	$3.00	$1,235,115		
						$1,235,115	
16 ELECTRICAL TOTAL							$14,085,598

SCHEME C: HYBRID

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME C: HYBRID
DIVISION SUMMARY

NEW BUILDING AREA	371,330 GSF
RENOVATED BUILDING AREA	22,683 GSF
TOTAL BUILDING AREA	394,013 GSF

1 GENERAL CONDITIONS		$3,600,000	$9.14 / GSF
2 SITEWORK		$14,380,518	$36.50 / GSF
3 CONCRETE		$5,256,069	$13.34 / GSF
4 MASONRY		$4,099,198	$10.40 / GSF
5 METALS		$8,237,663	$20.91 / GSF
6 WOODS, PLASTICS & COMPOSITES		$78,803	$0.20 / GSF
7 THERMAL & MOISTURE PROTECTION		$5,283,031	$13.41 / GSF
8 DOORS		$4,203,656	$10.67 / GSF
9 FINISHES		$7,062,621	$17.92 / GSF
10 SPECIALTIES		$1,491,108	$3.78 / GSF
11 EQUIPMENT		$1,050,000	$2.66 / GSF
12 FURNISHINGS		$1,721,991	$4.37 / GSF
13 SPECIAL CONSTRUCTION		$1,576,052	$4.00 / GSF
14 CONVEYING		$190,000	$0.48 / GSF
15 PLUMBING		$3,854,206	$9.78 / GSF
15 MECHANICAL		$21,574,951	$54.76 / GSF
16 ELECTRICAL		$13,530,582	$34.34 / GSF
SUBTOTAL		**$97,190,449**	**$246.67 / GSF**
DESIGN CONTINGENCY	**4.0%**	**$3,887,618**	**$9.87 / GSF**
SUBTOTAL		$101,078,067	
ESCALATION	**5.5%**	**$5,559,294**	**$14.11 / GSF**
SUBTOTAL		$106,637,361	
BONDS / INSURANCE	**2.0%**	**$2,132,747**	**$5.41 / GSF**
SUBTOTAL		$108,770,108	
CONTRACTOR'S OVERHEAD & PROFIT	**4.0%**	**$4,265,494**	**$10.83 / GSF**
SUBTOTAL		$113,035,602	
TOTAL		**$113,035,602**	**$286.88 / GSF**

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME C: HYBRID
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
01 GENERAL REQUIREMENTS						
Project Management & Coordination						
personnel / facilities / equipment	24	mth	$150,000.00	$3,600,000		
					$3,600,000	
01 GENERAL REQUIREMENTS TOTAL						$3,600,000
02 SITEWORK						
Site Demolition						
demolish existing site hardscaping / landscaping	900,000	sf	$0.30	$270,000		
					$270,000	
Building Demolition						
demolish existing building complete	290,648	sf	$10.00	$2,906,480		
demolish existing building for full renovation	22,683	sf	$6.00	$136,098		
					$3,042,578	
Earth Moving						
site cut / fill	900,000	sf	$0.50	$450,000		
basement excavation	1	ls	$150,000.00	$150,000		
					$600,000	
Erosion Control						
silt fence	2,000	lf	$5.00	$10,000		
construction fencing/protection	4,000	lf	$12.00	$48,000		
maintain erosion control devices	24	mos	$3,000.00	$72,000		
					$130,000	
Surfacing						
asphalt pavement	395,370	sf	$3.00	$1,186,110		
curb & gutter	10,365	lf	$22.00	$228,030		
concrete paving	60,000	sf	$6.50	$390,000		
decorative paving	5,000	sf	$20.00	$100,000		
athletic track	50,000	sf	$6.00	$300,000		
football field, synthetic turf	100,000	sf	$12.00	$1,200,000		
baseball field, large, sod	150,000	sf	$2.50	$375,000		
baseball field, small, sod	48,000	sf	$2.50	$120,000		
basketball courts	31,200	sf	$6.00	$187,200		
tennis courts	28,600	sf	$6.00	$171,600		
					$4,257,940	
Site Improvements						
bleachers @ athletic track	20,000	sf	$20.00	$400,000		
concessions building	4,000	sf	$150.00	$600,000		

SCHEME C: HYBRID
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
tickets building	4,000	sf	$120.00	$480,000		
exterior sports amenities / equipment	1	ls	$250,000.00	$250,000		
fencing	10,000	lf	$50.00	$500,000		
site walls	1	ls	$100,000.00	$100,000		
site furnishings	1	ls	$100,000.00	$100,000		
					$2,430,000	
Planting						
planting	1	ls	$150,000.00	$150,000		
					$150,000	
Water Utilities						
water / fire service	1	ls	$50,000.00	$50,000		
					$50,000	
Sanitary Sewer System						
sanitary sewer service	1	ls	$50,000.00	$50,000		
					$50,000	
Storm Water, Site						
micro-bioretention ponds, planters	70,000	sf	$15.00	$1,050,000		
storm drainage piping & structures	1	ls	$200,000.00	$200,000		
underground detention facility	1	ls	$2,000,000.00	$2,000,000		
					$3,250,000	
Electrical Service						
electrical service	1	ls	$150,000.00	$150,000		
					$150,000	
02 SITEWORK TOTAL						$14,380,518
03 CONCRETE						
Perimeter Footings & Foundation Walls						
excavation	3,630	cy	$30.00	$108,889		
forms	28,000	sf	$5.00	$140,000		
reinforcement	58,333	lbs	$0.80	$46,667		
concrete	778	cy	$200.00	$155,556		
waterproofing	14,000	sf	$3.00	$42,000		
foundation drainage system	3,500	lf	$25.00	$87,500		
					$580,611	
Spread Footings & Piers (allow 516 ea @6'x6'x1.5')						
excavation	2,809	cy	$30.00	$84,280		
forms	30,960	sf	$5.00	$154,800		
reinforcement	96,320	lbs	$0.80	$77,056		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME C: HYBRID
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
concrete	1,204	cy	$200.00	$240,800		
					$556,936	
Concrete Slab-on-Grade						
fine grade	140,487	sf	$0.20	$28,097		
gravel below slab- 6"	3,902	tons	$28.00	$109,268		
wire mesh	140,487	sf	$0.76	$106,770		
10mil vapor barrier	140,487	sf	$0.18	$25,288		
concrete 5" thick	2,168	cy	$200.00	$433,602		
concrete slab thickening	259	cy	$180.00	$46,667		
finish concrete	140,487	sf	$0.50	$70,244		
cure concrete	140,487	sf	$0.15	$21,073		
screeds/control joints	140,487	sf	$0.20	$28,097		
					$869,105	
Elevated Concrete Slab						
floor deck, @ new buildings	230,843	sf	$3.00	$692,529		
wire mesh	230,843	sf	$0.70	$161,590		
concrete, 4" thick	2,850	cy	$200.00	$569,983		
finish concrete	230,843	sf	$1.00	$230,843		
cure concrete	230,843	sf	$0.30	$69,253		
screeds/joints	230,843	sf	$0.20	$46,169		
					$1,770,366	
Roof Construction						
roof deck, @ new buildings	140,487	sf	$2.50	$351,218		
wire mesh	140,487	sf	$0.70	$98,341		
concrete, 3" thick	1,301	cy	$200.00	$260,161		
finish concrete	140,487	sf	$1.00	$140,487		
cure concrete	140,487	sf	$0.30	$42,146		
screeds/joints	140,487	sf	$0.20	$28,097		
					$920,450	
Other Concrete						
stair flights, (floor to floor), w/ hand/guardrails	13	ea	$25,000.00	$325,000		
basement concrete walls	10,000	sf	$20.00	$200,000		
equipment pads	800	sf	$12.00	$9,600		
elevator pit	2	ea	$12,000.00	$24,000		
					$558,600	
03 CONCRETE TOTAL						$5,256,069
04 MASONRY						
Masonry, Exterior						
brick (30% of 114,936 sf exterior skin)	34,481	sf	$22.00	$758,578		
CMU back-up to metal panel & brick skin	57,468	sf	$17.00	$976,956		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME C: HYBRID
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
repoint existing auditorium walls	16,110	sf	$12.00	$193,320		
caulking/sealants to brick	34,481	sf	$0.30	$10,344		
					$1,939,198	
Masonry, Interior						
interior CMU partitions, 12'h, allow 75%	180,000	sf	$12.00	$2,160,000		
					$2,160,000	
04 MASONRY TOTAL						$4,099,198
05 METALS						
Structural Steel						
lbs/sf	2,228	tons	$3,400.00	$7,575,132		
lbs/sf	23	tons	$3,400.00	$77,122		
base plates	516	ea	$400.00	$206,400		
anchor bolts	2,064	ea	$50.00	$103,200		
					$7,961,854	
Metal Fabrications						
guardrails / handrails	394,013	sf	$0.70	$275,809		
					$275,809	
05 METALS TOTAL						$8,237,663
06 WOODS, PLASTICS & COMPOSITES						
Rough Carpentry						
rough carpentry (plywood backboard)	394,013	sf	$0.20	$78,803		
					$78,803	
06 WOODS, PLASTICS & COMPOSITES TOTAL						$78,803
07 THERMAL & MOISTURE PROTECTION						
Panels & Sidings						
skin)	34,481	sf	$40.00	$1,379,232		
canopies	2,000	sf	$100.00	$200,000		
sun shades, exterior	2,000	lf	$150.00	$300,000		
					$1,879,232	
Roofing						
roofing	117,814	sf	$13.00	$1,531,582		
green roof	40,000	sf	$30.00	$1,200,000		
coping / fascia / flashings @ perimeter	3,500	lf	$40.00	$140,000		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME C: HYBRID
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
equipment pads, dunnage	1	ls	$20,000.00	$20,000		
					$2,891,582	
Fire & Smoke Protection						
fireproofing	394,013	sf	$1.00	$394,013		
					$394,013	
Joint Protection						
caulking/sealants	394,013	sf	$0.30	$118,204		
					$118,204	
07 THERMAL & MOISTURE PROTECTION TOTAL						$5,283,031
08 DOORS & WINDOWS						
Doors & Frames						
interior single doors, HM/WD	400	ea	$1,200.00	$480,000		
interior double doors, HM/WD	200	ea	$2,200.00	$440,000		
					$920,000	
Exterior Doors						
double doors	30	ea	$4,500.00	$135,000		
automatic door controls	30	ea	$3,500.00	$105,000		
					$240,000	
Curtain Walls, Windows, Storefront & Glazing						
curtainwall (15% of 114,936 sf exterior skin)	17,240	sf	$80.00	$1,379,232		
storefront (15% of 114,936 sf exterior skin)	17,240	sf	$60.00	$1,034,424		
interior glazing	15,750	sf	$40.00	$630,000		
					$3,043,656	
08 DOORS & WINDOWS TOTAL						$4,203,656
09 FINISHES						
Plaster & Gypsum Board						
interior GWB w/ furring	433,578	sf	$4.00	$1,734,312		
interior stud partitions, 12'h, allow 25%	60,000	sf	$12.00	$720,000		
					$2,454,312	
Ceilings						
ceilings	394,013	sf	$5.00	$1,970,065		
					$1,970,065	
Flooring						
floor finishes	374,312	sf	$4.50	$1,684,406		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME C: HYBRID
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
polished concrete floor	19,701	sf	$10.00	$197,007		
					$1,881,412	
Wall Finishes / Painting						
paint walls	553,578	sf	$0.65	$359,826		
special wall finishes	394,013	sf	$0.50	$197,007		
ceramic wall tile	20,000	sf	$10.00	$200,000		
					$756,832	
09 FINISHES TOTAL						$7,062,621
10 SPECIALTIES						
Visual Display Surfaces						
signage	394,013	sf	$0.30	$118,204		
					$118,204	
Interior Specialties						
acoustical panels @ auditorium	1	ls	$300,000.00	$300,000		
special interiors to auditorium	1	ls	$200,000.00	$200,000		
toilet accessories	394,013	sf	$0.30	$118,204		
fire extinguishers and cabinets	394,013	sf	$0.05	$19,701		
lockers	2,450	ea	$300.00	$735,000		
					$1,372,905	
10 SPECIALTIES TOTAL						$1,491,108
11 EQUIPMENT						
Equipment						
kitchen / cafeteria equipment	1	ls	$700,000.00	$700,000		
interior physical education equipment	1	ls	$50,000.00	$50,000		
auditorium lighting, audio, equipment	1	ls	$300,000.00	$300,000		
					$1,050,000	
11 EQUIPMENT TOTAL						$1,050,000
12 FURNISHINGS						
Window Shades						
window shades, manual, storefront & int glazing	32,990	sf	$5.00	$164,952		
					$164,952	
Casework / Furniture						
built-in casework	394,013	sf	$3.00	$1,182,039		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME C: HYBRID
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
physical education seating	1	ls	$100,000.00	$100,000		
re-upholster existing auditorium seating	1,500	seat	$150.00	$225,000		
auditorium stage	1	ls	$50,000.00	$50,000		
					$1,557,039	
12 FURNISHINGS TOTAL						$1,721,991
13 SPECIAL CONSTRUCTION						
Fire Suppression						
sprinkler system	394,013	sf	$4.00	$1,576,052		
					$1,576,052	
13 SPECIAL CONSTRUCTION TOTAL						$1,576,052
14 CONVEYING EQUIPMENT						
Conveying Equipment						
passenger elevator (2 ea)	6	stop	$30,000.00	$180,000		
elevator cab finish	2	ea	$5,000.00	$10,000		
					$190,000	
14 CONVEYING EQUIPMENT TOTAL						$190,000
15 PLUMBING						
Domestic Water Piping						
domestic water piping	394,013	sf	$3.00	$1,182,039		
					$1,182,039	
Sanitary & Vent System						
sanitary piping	394,013	sf	$2.00	$788,026		
					$788,026	
Storm Drainage System						
storm water drainage	394,013	sf	$1.00	$394,013		
					$394,013	
Gas Piping						
gas piping	394,013	sf	$0.20	$78,803		
					$78,803	
Plumbing Equipment						
plumbing equipment	394,013	sf	$1.00	$394,013		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME C: HYBRID
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
misc. valves	394,013	sf	$0.50	$197,007		
					$591,020	
Plumbing Fixtures						
toilet	80	ea	$2,200.00	$176,000		
urinal	50	ea	$1,800.00	$90,000		
round sink	80	ea	$1,500.00	$120,000		
drinking fountain	16	ea	$3,500.00	$56,000		
mop sink allow	6	ea	$3,500.00	$21,000		
lab / classroom sinks	80	ea	$1,500.00	$120,000		
floor drains	50	ea	$500.00	$25,000		
roof drains	30	ea	$500.00	$15,000		
					$623,000	
Other Plumbing						
commissioning support	200	hrs	$100.00	$20,000		
testing	394,013	sf	$0.10	$39,401		
penetrations/firestopping	394,013	sf	$0.35	$137,905		
					$197,306	
15 PLUMBING TOTAL						$3,854,206
15 MECHANICAL						
HVAC Piping						
HVAC piping	394,013	sf	$8.00	$3,152,104		
valves/accessories	394,013	sf	$1.00	$394,013		
					$3,546,117	
HVAC Air Distribution						
ductwork allow, 1.2 lbs/sf	472,816	lbs	$8.00	$3,782,525		
ductwork linings / insulation	330,971	sf	$2.60	$860,524		
duct accessories	394,013	sf	$2.00	$788,026		
					$5,431,075	
HVAC Equipment						
HVAC equipment	394,013	sf	$18.00	$7,092,234		
geothermal wells	565	ea	$2,400	$1,356,000		
					$8,448,234	
Other HVAC						
controls, DDC	394,013	sf	$8.00	$3,152,104		
vibration isolation/control	394,013	sf	$0.30	$118,204		
overhead, rigging, start-up	1	ls	$60,000.00	$60,000		
coordination drawings	120	hrs	$100.00	$12,000		
temporary filters/controls	1	ls	$25,000.00	$25,000		
testing & balancing	394,013	sf	$0.80	$315,210		

HIGH POINT HIGH SCHOOL
PRINCE GEORGE'S COUNTY, MD
FEASIBILITY STUDY COST ESTIMATE

SCHEME C: HYBRID
ESTIMATE DETAIL

ITEM	QUANTITY	UNIT	RATE	ITEM TOTAL	SUBTOTAL	DIV. TOTAL
cutting/patching/fire stopping	394,013	sf	$0.50	$197,007		
commissioning support	300	hrs	$100.00	$30,000		
mechanical general conditions	24	mos	$10,000.00	$240,000		
					$4,149,525	
15 MECHANICAL TOTAL						$21,574,951
16 ELECTRICAL						
Electrical Equipment						
electrical equipment	394,013	sf	$7.00	$2,758,091		
					$2,758,091	
Electrical Power Devices						
branch circuit device allowance	394,013	sf	$6.00	$2,364,078		
mechanical equipment connections	394,013	sf	$2.00	$788,026		
					$3,152,104	
Interior Lighting						
lighting	394,013	sf	$7.00	$2,758,091		
lighting controls	394,013	sf	$1.20	$472,816		
					$3,230,907	
Exterior Lighting						
floodlights for sports fields	10	ea	$60,000.00	$600,000		
street lighting	50	ea	$6,000.00	$300,000		
					$900,000	
Other Electrical						
lightning protection/grounding system	394,013	sf	$0.12	$47,676		
grounding	394,013	sf	$0.30	$118,204		
temporary power/lighting	394,013	sf	$0.30	$118,204		
penetrations/firestopping	394,013	sf	$0.25	$98,503		
testing	394,013	sf	$0.10	$39,401		
commissioning support	300	hrs	$100.00	$30,000		
electrical general conditions	24	mos	$10,000.00	$240,000		
					$691,988	
Data / Voice Communications						
telecommunication	394,013	sf	$2.00	$788,026		
					$788,026	
Audio-Video Communications						
audio visual system	394,013	sf	$1.00	$394,013		
					$394,013	

16 ELECTRICAL TOTAL	$13,530,582

END OF REPORT